STATE OF CALIFORNIA

DEPARTMENT OF WATER RESOURCES

DIVISION OF RESOURCES PLANNING

BULLETIN NO. 66

UALITY OF GROUND WATERS IN CALIFORNIA 1955-1956

GOODWIN J. KNIGHT
Governor

HARVEY O. BANKS
Director of Water Resources

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STATE OF CALIFORNIA

Department of Water Resources

SACRAMENTO

June 10, 1958

Honorable Goodwin J. Knight, Governor
and Members of the Legislature of the
State of California

Water Pollution Control Boards

Gentlemen:

I have the honor to transmit herewith a report on the quality of ground waters in California during 1955 and 1956. This is the second in a continuing series of reports on this important subject.

The program to provide information on mineral quality of ground waters and to detect significant changes in quality which may be attributable to a specific source or cause was initiated in 1953. This information is necessary in the preparation and analysis of plans for continued and intensive utilization of underground storage proposed in The California Water Plan.

This report covers the period from January, 1955 through December, 1956, and presents mineral analyses of ground waters in 31 important ground water areas in the State.

Very truly yours,

Harvey O. Banks

HARVEY O. BANKS
Director

ACKNOWLEDGMENT

The extensive coverage of the statewide ground water quality monitoring program is made possible through the cooperation of numerous local agencies. This monitoring program encompasses the yearly collection of about 900 ground water samples located in 31 areas throughout the State.

Valuable assistance and cooperation, for the areas reported herein, of the following agencies and persons, is gratefully acknowledged:

United States Geological Survey, Quality of Water Branch

Alameda County Flood Control and Water Conservation District

Del Norte & Humboldt County Farm Advisor

Kern County Farm Advisor

Mendocino County Farm Advisor

Monterey County Flood Control and Water Conservation District

Orange County Air and Water Pollution Control District

Sutter County Farm Advisor

Yuba County Farm Advisor

San Joaquin Local Health District

California Water & Telephone Company, National City

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NOTE: Pursuant to Chapter 52, Statutes of 1956, effective July 5, 1956, the Department of Water Resources succeeded to all the functions, duties and responsibilities concerning water quality formerly assigned to the Division of Water Resources.

ORGANIZATION

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Executive Secretary

QUALITY OF GROUND WATERS IN CALIFORNIA

1955-56

CHAPTER I INTRODUCTION

More than one-half of the water presently utilized for beneficial purposes in California is derived from underground storage. The ground water reservoirs which provide this important source of water are found principally in the larger alluvium-filled valleys of the State. Limited quantities of usable ground water, however, occur in the numerous small, shallow, alluvium-filled valleys throughout the State, as well as in extensive areas of older, slightly compacted sediments and limited areas of waterbearing volcanics.

The importance of maintaining the supply available from ground water, and the need for greater utilization of the underground storage capacity in meeting future water requirements, has established the necessity for continued collection of data relative to ground water quality. Such data are essential to any program of quality control, and are indispensable to formulation of plans for conjunctive operation of surface and underground storage, as proposed under The California Water Plan.

Because of the widespread occurrence, and relatively slow rate of movement of ground water, the determination of ground water quality and detection of changes therein require reliable long term observation and records. Accordingly, a statewide program of observation of ground water quality to provide such data was commenced in the summer of 1953.

This is the second of a series of reports presenting the basic water quality data in selected ground water basins and monitored areas of the State. It includes results of analyses of ground water samples collected during the period January, 1955, through December, 1956.

Water Quality Investigation Report No. 14 entitled "Ground Water Quality Monitoring Program in California" was the first of this series.

Authorization

The continuing ground water quality monitoring program reported upon herein is authorized by Section 229 of the Water Code. This section directs that:

> "The Department of Water Resources shall investigate conditions of the quality of all waters within the State, including saline waters, coastal and inland, as related to all sources of pollution of whatever nature and shall report thereon to the Legislature and to the appropriate regional water pollution control board annually, and may recommend any steps which might be taken to improve or protect the quality of such waters."

Objectives and Scope

The statewide ground water quality monitoring program has the following main objectives:

(1) To provide information on the present or prevailing mineral quality of ground waters as related to various beneficial uses;

(2) To secure data relative to significant changes in mineral quality resulting from these uses and from the effects of waste disposal;

(3) To ascertain the area affected by such changes and provide a continuing check of quality of ground waters.

The program presently comprises systematic collection and mineral analysis of water samples from 31 ground water basins in California. Suggestions from the regional Water Pollution Control Boards and other water agencies were given due consideration in the selection of monitoring areas and well networks.

In general, monitored areas may be divided into three classifications, based on the water quality problem and use of waters. These classifications are: (1) areas wherein water quality problems presently exist, whether or not associated with existing uses, (2) areas wherein extensive use is made of the ground water resources without necessarily creating water quality problems, and (3) areas in which ground water is not presently used extensively but in which it is desirable to secure data on water quality conditions in preparation for potential urban, agricultural or industrial development.

Water quality problems may be caused by sea water intrusion, connate saline brines, adverse salt balance, waste discharges or natural sources of quality impairment such as mineralized springs. Sea water intrusion into coastal basins is particularly critical and its extent must be accurately determined and its effects evaluated.

The frequency of sampling and the density of the sampling network depends upon the classification of the area monitored, and the nature and imminence of the quality problem.

Areas in classification (1) are sampled one or more times per year. Areas in classification (2) are sampled one time per year and those areas in classification (3) after sufficient data are collected to categorize the basin, are sampled every other year.

The monitoring program is continually being expanded (1) to include additional areas for which no previous water quality data are available but where it is anticipated that development will ultimately take place; (2) to include areas where new water quality problems are found; (3) to continue water quality records in areas where specific water quality investigations were conducted, and (4) to supplement or fill gaps in water quality data in areas where serious water quality problems exist.

It is planned to expand this program during 1958 to include radiological as well as mineral analyses in all of the monitored areas. These data are necessary to establish background information by which any subsequent increase in radioactivity of ground waters may be detected.

Eventually every major, and many minor ground water basins in the State will be included in the ground water quality monitoring program. Such coverage is essential in the formulation of the long range water development program envisioned under The California Water Plan.

Survey Methods

Wells selected for inclusion in the ground water quality monitoring network are assigned numbers based upon their location by township, range and section. The numbering system is the same as that used by the United States Geological Survey. Under this system, each section is divided into 40-acre plots, lettered as follows:

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are numbered according to the order in which they are located within the 40-acre plots. For example, a well having a number 3N/6E-24A2, MDB&M is found in Township 3 North, Range 6 East, and in Section 24, Mount Diablo Base and Meridian. It is further identified as the second well located in the 40-acre plot lettered "A". Water samples analyzed for this report are from wells located throughout the State and are, therefore, referenced to either the Humboldt, San Bernardino or Mount Diablo Base and Meridian. Reference Bases are indicated in the tables in the appendices

which contain tabulated data on wells and quality of well waters.

Laboratory analyses of the water samples are performed by the Department of Water Resources laboratories located in Sacramento, San Bernardino and Riverside and by the Water Quality Branch of the United States Geological Survey.

Laboratory Methods and Procedures

Analytical methods used in water quality and characteristic determinations conform to the procedures found in "Standard Methods for the Examination of Water and Sewage," 10th Edition, 1955, a publication of the American Public Health Association.

The following tabulation indicates the tests made and the constituents generally determined in the various analyses performed in connection with the Ground Water Quality Monitoring Program.

Constituent or characteristic determined	Standard mineral analysis	Partial mineral analysis
Specific Conductance	X	X
pH	X	X
Total Dissolved Solids	X	
Per Cent Sodium	X	
Hardness	X	X
Temperature	X	X
Calcium	X	
Magnesium	X	
Sodium	X	X
Potassium	X	
Carbonate	X	
Bicarbonate	X	

Constituent or characteristic determined	Standard mineral analysis	Partial mineral analysis
Sulfate	X	
Chloride	X	X
Nitrate	X	
Fluoride	X	
Boron	X	X
Silica	X	

In addition to the tests indicated above, determination of heavy metals is made when warranted.

Water Quality Criteria

Criteria which serve to indicate the acceptability of water for the most common beneficial uses are described in this section. These criteria are used by the Department of Water Resources in classifying water on the basis of suitability for various uses. In nearly all cases the values given are useful principally as guides to effective judgment.

Criteria for Drinking Water

Water that is used for drinking and culinary purposes must be clear, colorless, odorless and pleasant to the taste, and must not endanger the lives or health of human beings. These general requirements pertain to the water as it is finally delivered to the consumer. In many cases, prior treatment may be necessary.

Chapter 7 of the California Health and Safety Code contains laws and standards relating to domestic water supply. Section 4010.5 of this code refers to the drinking water standards promulgated by the United States Public Health Service for water used on interstate carriers, and adopted as

drinking water standards by the State of California. In accordance with these standards, chemical substances in drinking water supplies, either natural or treated, should not exceed the concentrations shown in Table 1, adapted from the detailed regulations contained in the United States Public Health Report, Volume 61, No. 11, March 15, 1946.

TABLE 1

LIMITING CONCENTRATIONS OF
MINERAL CONSTITUENTS FOR DRINKING WATER

United States Public Health Service
Drinking Water Standards, 1946

Constituent	Parts per Million
Mandatory	
Fluoride (F)	1.5
Lead (Pb)	0.1
Selenium (Se)	0.05
Hexavalent Chromium (Cr^{+6})	0.05
Arsenic (As)	0.05
Non-Mandatory but Recommended Values	
Iron (Fe) and Manganese (Mn) together	0.3
Magnesium (Mg)	125
Chloride (Cl)	250
Sulfate (SO_4)	250
Copper (Cu)	3.0
Zinc (Zn)	15
Phenolic Compounds in terms of phenol	0.001
Dissolved Solids, Desirable	500
Dissolved Solids, Permitted	1000

Other organic or mineral substances may be limited in concentration if their presence in water renders it hazardous as determined by state or local health authorities.

The relationship of infant methemoglobinemia (a reduction of oxygen content in the blood, constituting a form of asphyxia) to nitrates in the water supply has led to limitation of nitrates in drinking water. The California State Department of Public Health has recommended a tentative limit of 10 ppm nitrogen (44 ppm nitrates) for domestic waters. Water containing higher concentrations of nitrates may be considered to be of questionable quality for domestic and municipal use.

An additional factor with which users are concerned is the hardness of the water. Hardness is principally due to calcium and magnesium and is generally evidenced to the consumer by inability to develop suds when using soap. In general domestic use, hardness can result in increased soap consumption and excessive repairs to plumbing. The following classification of water according to hardness has been suggested by the United States Geological Survey:

Class	Range of hardness in ppm	Relative classification
1	0-55	Soft
2	56-100	Slightly Hard
3	101-200	Moderately Hard
4	201-500	Very Hard

Criteria for Irrigation Water

The Department of Water Resources uses the criteria for mineral quality of irrigation water developed at the University of California at Davis and at the United States Department of Agriculture Regional Salinity

Laboratory at Riverside. Because of diverse climatological conditions and variations in crops and soils in California, only general limits of quality for irrigation waters can be suggested. The Department uses the three broad classifications of irrigation waters listed in Table 2.

TABLE 2

QUALITATIVE CLASSIFICATION OF IRRIGATION WATERS

Chemical Properties	Class I Excellent to Good (Suitable for most plants under any conditions of soil and climate)	Class II Good to Injurious (Possibly harmful for some crops under certain soil conditions)	Class III Injurious to Unsatisfactory (Harmful to most crops and unsatisfactory for all but the most tolerant)
Total dissolved solids			
In ppm	Less than 700	700-2,000	More than 2,000
In conductance EC x 10^6	Less than 1,000	1,000-3,000	More than 3,000
Chloride ion concentration			
In milliequivalents per liter	Less than 5	5-10	More than 10
In ppm	Less than 175	175-350	More than 350
Sodium in per cent of base constituents	Less than 60	60-75	More than 75
Boron in ppm	Less than 0.5	0.5-2.0	More than 2.0

Criteria for Industrial Uses

Quality criteria for the diversified uses of water in industry range from exacting requirements for makeup water used in high pressure boilers to minimum requirements for water for washdown and ore quenching.

Industrial use of water includes utilization for food processing.

Except for certain canning operations, water for this purpose must at least conform to quality requirements for drinking water supplies. The requirements of some food processing industries, however, are more stringent than those contained in the drinking water standards of the United States Public Health Service.

Because of the large number of industrial uses of water with widely varied quality requirements, it is difficult to establish more than very broad criteria of quality. Therefore, these requirements are expressed, where possible, for groups of related industries rather than for individual plants. The general quality requirements of several single industries and for representative major groups of industrial uses are listed in Table 3.

TABLE 3

WATER QUALITY TOLERANCE FOR INDUSTRIAL USES[a]

Allowable Limits in Parts per Million

Use	Turbidity	Color	Hardness as $CaCO_3$	Iron[c] as Fe	Manganese as Mn	Total Solids	Alkalinity as $CaCO_3$	Odor Taste	Hydrogen Sulfide	Miscellaneous Requirements	
										Health	Other
Air Conditioning				0.5	0.5			Low	1		No corrosiveness, slime formation
Baking	10	10		0.2	0.2			Low	0.2	Potable[b]	
Brewing											
Light Beer	10			0.1	0.1	500	75	Low	0.2	Potable[b]	Nacl less than 275 ppm (pH 6.5-7.0)
Dark Beer	10			0.1	0.1	1,000	150	Low	0.2	Potable[b]	Nacl less than 275 ppm (pH 7.0 or more)
Canning											
Legumes	10		25-72	0.2	0.2			Low	1	Potable[b]	
General	10			0.2	0.2			Low	1	Potable[b]	
Carbonated Beverages	2	10	250	0.2	0.2	850	50-100	Low	0.2	Potable[b]	Organic color plus oxygen consumed less than 10 ppm
Confectionery				0.2	0.2	100		Low	0.2	Potable[b]	pH above 7.0 for hard candy
Cooling	50		50	0.5	0.5				5		No corrosiveness, slime formation
Food:General	10			0.2	0.2			Low		Potable[b]	
Ice	5	5	50	0.2	0.2			Low		Potable[b]	SiO_2 less than 10 ppm
Laundering			50	0.2	0.2						
Plastics, Clear											
Uncolored	2	2		0.02	0.02	200					
Paper and Pulp											
Groundwood	50	20	180	1.0	0.5						No grit, corrosiveness
Kraft Pulp	25	15	100	0.2	0.1	300					
Soda and Sulfide	15	10	100	0.1	0.05	200					
High-Grade Light Papers	5	5	50	0.1	0.05	200					
Rayon (Viscose)											
Pulp Production	5	5	8	0.05	0.03	100	Total 50; Hydroxide 8				Al_2O_3 less than 8 ppm, SiO_2 less than 25 ppm, Cu less than 5 ppm
Manufacture	0.3		55	0.0	0.0						pH 7.8 to 8.3
Tanning	20	10-100	50-135	0.2	0.2		Total 135; Hydroxide 8				
Textiles:General	5	20		0.25	0.25						
Dyeing	5	5-20		0.25	0.25	200					Constant composition. Residual alumina less than 0.5 ppm
Wool Scouring		70		1.0	1.0						
Cotton Bandage	5	5		0.2	0.2			Low			

a - Moore, E. W., Progress Report of the Committee on Quality Tolerances of Water for Industrial Uses: Journal New England Water Works Association, Volume 54, Page 271, 1940.

b - Potable water, conforming to U.S.P.H.S. standards, is necessary.

c - Limit given applies to both iron alone and the sum of iron and manganese.

CHAPTER II GROUND WATER QUALITY

The ground water basins and areas included in the water quality monitoring program are described in this chapter. The descriptions of basins are segregated by water pollution control regions. These regions, with the exception of Regions 4, 8, and 9, are synonymous with the seven hydrographic areas into which the State has been divided. Regions 4, 8, and 9, together comprise Hydrographic Area 4. The description of each basin includes a discussion of the source and the beneficial use of ground water. The reasons for including the basin in the monitoring program and an evaluation of water quality, together with the associated problems in the basin, are given.

As previously stated, monitored areas fall into three broad classifications based upon the existence of quality problems, the extent of ground water development, and the need for historical data. Locations of the basins currently included in the ground water quality monitoring program are shown on Plate 1.

North Coastal Region (No. 1)

The North Coastal Region includes the basins draining into the Pacific Ocean between the California-Oregon boundary and the northern boundary of Lagunitas Creek drainage area in Marin County. The region extends approximately 270 miles from north to south and ranges in width from 180 miles at the Oregon boundary to 30 miles in the southern portion. It occupies an area of about 19,000 square miles.

Eighteen ground water basins have been identified in the North Coastal Region, and portions of three basins have been included in the

ground water quality monitoring program. These basins are the Smith River Plain, Ukiah Valley, and Sanel Valley. Two of these monitored areas were reported previously and Sanel Valley was added to the program in 1956.

Smith River Plain, Crescent City Area

The Smith River Plain is the largest alluvial area in Del Norte County. It averages 20 miles in length, $3\frac{1}{2}$ miles in width and comprises about 70 square miles in the northwest portion of the county. The major sources of ground water in the Smith River Plain are the unconsolidated stream channel, flood plain, lake, and alluvial fan deposits; the loosely packed sand dunes; the stream terrace deposits; and the compacted marine formation. Average yield of wells ranges from about 20 gallons per minute for wells in the marine formation to 340 gallons per minute for wells in the stream channel and flood plain deposits.

Ground water provides about one-half of the water used for agricultural and municipal purposes and practically all water used for domestic requirements in the Smith River Plain.

Due to both the heavy precipitation and the percolation characteristics of the soil of the Crescent City area, the water table is close to the ground surface during much of the year. The use of septic tanks creates a serious problem and is a threat to the quality of local ground water supplies, particularly from the standpoint of domestic uses. For this reason, a ground water quality monitoring network of 15 wells was established in this area to evaluate and maintain a check on water quality conditions. Data on wells included in the network are presented in Appendix A.

Ground waters of the Smith River Plain are generally calcium magnesium bicarbonate to magnesium bicarbonate type waters of excellent mineral quality. Mineral analyses of samples collected during the

reporting period are presented in Appendix B. During the period 1953 to 1956 a slight increase in total dissolved solids occurred, the maximum and minimum increase being 46 ppm and 3 ppm respectively. Comparison of other constituents in the analyses indicates there has been little variation in the mineral quality of the ground waters sampled from the monitored wells.

Ukiah Valley

Ukiah Valley is the largest and most important alluvial area in Mendocino County. It is approximately 22 miles in length, attains a maximum width of about 5 miles, and occupies an area of about 65 square miles in the southeastern portion of the county.

Recent alluvium, stream channel and terrace deposits comprise the major sources of ground water. Semiconsolidated sediments provide a secondary source, and the underlying sedimentary and metamorphic rocks yield a minor quantity of water, sometimes highly mineralized, to several springs in the area.

The yield of wells varies considerably, depending upon the nature of the underlying material, and ranges in the Recent alluvium from 50 to 200 gallons per minute. Relatively high yields are obtained from stream channel deposits along the major streams. These deposits, however, are limited in horizontal extent and attain a maximum thickness of only about 40 feet. Yield of wells in the terrace deposits ranges from negligible quantities to as much as 15 gallons per minute.

Domestic and industrial water supplies in Ukiah Valley are obtained entirely from ground water. Irrigation water is also furnished from wells to some extent. In general, most of the irrigated land adjacent to the Russian River is supplied by direct diversion from the river or

by shallow wells which derive their supply from underflow.

Quality of ground water in Ukiah Valley is extremely variable in character. Ground water adjacent to the river is calcium magnesium bicarbonate in type. This water is excellent quality and is suitable for present beneficial uses. Wells and springs containing highly mineralized waters are found along the edges of the valley. The springs derive their flow from deep-seated juvenile water and are a source of degradation to the ground water supplies.

The importance of ground water supply to the economy of this valley and the water quality problem resulting from commingling of the highly mineralized juvenile water with the good quality ground water, resulted in the establishment of a monitoring network of 11 wells in this area. Data for wells included in the monitoring network are presented in Appendix A. Mineral analyses of samples collected from these wells are presented in Appendix B.

With the exception of one well (17N/12W-18A1), water samples collected from these wells generally contain total dissolved solids less than 400 parts per million. These wells are also low in boron and per cent sodium. Well No. 17N/12W-18A1, however, located in the northern portion of Ukiah Valley contains water wherein a concentration of total dissolved solids of 1120 parts per million has been recorded, boron concentrations are as high as 73 parts per million, and sodium comprises 85 per cent of the base constituents. This is an increase of 90 parts per million total dissolved solids and 18 parts per million of boron in water from this well since August, 1953. The nine wells from which samples were collected both in 1953 and 1956 show little change in mineral concentrations.

Sanel Valley

Sanel Valley is an irregularly shaped area, containing about 11.5 square miles, located in the southeastern portion of Mendocino County.

The deposits of major importance as a source of ground water in Sanel Valley include the Recent alluvium, stream channel, and terrace deposits. Yields of wells range from 750 to 1250 gallons per minute in the stream channel deposits adjacent to the Russian River to as low as 5 to 50 gallons per minute in the terrace deposits.

Domestic water supplies for the area are derived from ground water, either from individual wells or from those of a water company which supplies a portion of the community of Hopland. Irrigation water for that portion of the valley not adjacent to the Russian River is almost exclusively supplied from ground water.

Ground waters in Sanel Valley are characteristically magnesium calcium bicarbonate in type, with total dissolved solids ranging from 160 to 317 parts per million and, generally, are suitable for most beneficial uses. However, ground water in some portions of the area contains up to 2.4 ppm of boron which restricts its use for irrigation of boron sensitive crops.

Due to the importance of ground water supplies to the economy of this valley and the presence of boron in appreciable quantities, a monitoring network of 6 wells was established in the area. Data on wells included in the network are presented in Appendix A.

A comparison of mineral analyses of samples collected in 1956 and those collected in 1953 indicated no changes in nature or concentration of mineral constituents. Mineral analyses of samples obtained from the monitoring well network are presented in Appendix B.

San Francisco Bay Region (No. 2)

The San Francisco Bay Region includes all of the basins which drain into San Francisco, San Pablo, and Suisun Bays below Antioch. It includes parts of Marin, Sonoma, Napa, Santa Clara, Alameda, Contra Costa, San Mateo, and Solano Counties, and all of San Francisco County. The region is about 125 miles long, averages 45 miles in width and occupies an area of about 4,400 square miles.

Eleven ground water basins have been identified in San Francisco Bay Region but only two, Livermore and Santa Clara Valleys, have thus far been included in the ground water monitoring program. Santa Clara Valley has been subdivided into two areas, East Bay and South Bay, for monitoring purposes.

Santa Clara Valley, East Bay Area

The East Bay Area of Santa Clara Valley comprises about 140 square miles of alluvial land which lies between the base of the western slope of the Diablo Mountain Range and San Francisco Bay and extends from San Leandro Creek on the north to the Alameda-Santa Clara County line on the south.

At least two separate aquifers can be differentiated in most parts of this area. Each of these aquifers consists of a series of permeable gravel beds, generally irregular and lenticular, and some sands. In the portion of this region north of Alvarado, ground water is derived from the San Leandro and San Lorenzo cones. In the San Leandro cone most pumping is from the upper aquifer, which comprises all sediments to a depth of about 200 feet. In the San Lorenzo cone, the upper 200 feet of sediments is also considered to be the upper aquifer and underlying water-bearing materials comprise the lower aquifer. Most irrigation, industrial, and municipal wells derive their water from the lower aquifer.

In the area between Alvarado and the Alameda-Santa Clara County line ground water is derived from sediments of the Niles cone. The upper aquifer in this area has been degraded to such an extent by salt-water intrusion that the major portion of the present water supply is obtained from the lower aquifer which is found in the depth interval from 200 to 300 feet. Yield of wells drawing water from both aquifers is highly variable. Limited data indicate that yields vary from 100 to more than 800 gallons per minute from the upper aquifer and from 250 to 800 gallons per minute in the lower aquifer.

Although some water is imported to the East Bay Area of Santa Clara Valley, the greater portion of irrigation and suburban water requirements are met by pumping from underlying ground waters. The northern portion of the area is largely developed for industrial, commercial and urban purposes, while the central and southern portions are devoted to agriculture, both irrigated and non-irrigated. Pumping draft on ground water resources of the area has increased to such an extent that ground water levels in the upper and lower aquifers remain perennially below sea level throughout a large portion of the area.

A serious water quality problem exists in the Niles cone area caused by the intrusion of saline waters into the fresh water aquifers adjacent to San Francisco Bay. Sea-water intrusion was first noted in this area in 1924 and at present the intrusion exists primarily in the upper aquifer. Some degradation in isolated areas has occurred in the lower aquifer apparently from downward movement of saline water from the upper aquifer. Direct intrusion of sea-water into the lower aquifer may possibly occur during periods when the normal seaward slope of the hydraulic gradient is reversed by overdraft conditions.

In order to maintain continuous observations of the quality of ground water in the area subject to sea-water intrusion, a monitoring

network of 12 wells was established. Data on the monitor wells are presented in Appendix A. Mineral analyses of samples from the monitored wells are presented in Appendix B. Continued intrusion of sea-water is indicated by substantial increases in chloride concentration in four wells which draw from the upper aquifer near Centerville. Chloride concentration in water samples from well 4S/1W-29M1 increased from 238 ppm in 1953 to 1550 ppm in 1955 and then decreased to 769 ppm in 1956. A gradual increase in chloride concentration from 137 ppm in 1953 to 1230 ppm in 1955 occurred in waters from well 4S/1W-29Q1. Chloride concentrations in water from well 4S/1W-30C3 increased from 123 to 261 ppm in the period from August, 1953, to October, 1955. Water collected from this well in June, 1956, had a chloride concentration of 1046 ppm. The fourth well in the Centerville area showing a substantial increase in chloride concentrations is well No. 4S/1W-31G2. Chloride content in water from this well increased from 872 to 1759 ppm between 1954 and 1956. Degraded water also occurs in the lower aquifer near Centerville where chloride concentration in waters from well 4S/1W-30K3 increased from 352 ppm in 1953 to 1320 ppm in 1955 and then decreased to 168 ppm in 1956. The reason for this decrease has not been determined.

Santa Clara Valley, South Bay Area

The South Bay Area of Santa Clara Valley reported herein comprises that portion of north Santa Clara Valley lying within Santa Clara County and extends from San Francisco Bay southerly to San Jose. The area is bounded on the west by the Santa Cruz mountains and on the east by the Diablo Range. The monitored area extends about 15 miles in an east-west direction and about 10 miles north to south.

Water-bearing sediments of the Santa Clara Valley occupy the valley proper and some adjacent areas. The main source of ground water in

Santa Clara Valley comprises alluvial fan deposits, and tideland deposits. Other sources include flood plain and marine swamp deposits.

Available information indicates that both free and confined ground water exists in the present zones of pumping in Santa Clara Valley. The principal pumping aquifers in the monitored area exhibit pressure characteristics and are separated from the free ground water zone by relatively impervious strata which prevent hydraulic continuity with overlying water-bearing deposits. Depths of wells range from 150 to 800 feet and pumping plants capable of delivering 1000 gpm exist in the valley.

Ground water presently supplies about 95 per cent of the requirements of Santa Clara Valley. About 75 per cent of the water presently utilized is consumed in the production of irrigated crops. It is probable, however, that future development in the area included in the monitoring program will be largely urban.

Ground water in limited areas of the eastern portion of Santa Clara Valley is unfit for prolonged irrigation. Ground water found in the Penitencia Creek cone contains relatively high concentrations of boron while that in a portion of the Silver and Dry Creek cones has a high magnesium content. Water of questionable quality also occurs in the fringes of the tide-land area adjacent to San Francisco Bay. Waters that have been monitored in the remainder of the area are nearly always of good quality and suitable for most uses.

Investigations made by the Department of Water Resources disclosed that the normal seaward slope of the hydraulic gradient in the pressure aquifer was reversed at times due to excessive lowering of ground water levels during the dry season, causing a potential threat of degradation due to sea-water intrusion. For these reasons the area was included in the monitoring

program for continued observation. The present program consists of a monitoring network of 26 wells. Data on monitored wells are presented in Appendix A.

Mineral analyses of samples obtained from the monitored wells are presented in Appendix B. Comparison of these analyses shows no significant change in quality characteristics of the ground water in the monitored area during 1955-1956. The maximum chloride concentration observed was 515 ppm in June, 1955, in water from well No. 6S/2W-9G1.

Livermore Valley

Livermore Valley lies, for the most part, in the eastern portion of Alameda County with a minor area extending into Contra Costa County. The valley floor is about 14 miles in length from east to west, varies from three to six miles in width, and comprises an area of about 65 square miles.

Livermore Valley is a structural basin developed in a syncline with an axis trending nearly east-west in direction. The floor of Livermore Valley is covered by alluvial, lake and swamp deposits.

Free ground water generally exists throughout Livermore Valley. A pressure area, however, is formed in the vicinity of Pleasanton by at least four defined layers of blue clay alternating with gravel beds. Average yield of irrigation wells in the pressure area is about 500 gallons per minute, with individual wells yielding as high as 2000 gpm at depths of 300 feet or less.

Ground water supplies nearly all of the water requirements of Livermore Valley. The principal uses of ground water are irrigation, industrial, and urban, with irrigation constituting the greatest present requirement.

Due to the dependence on ground water supplies and the presence

of boron in harmful concentrations, a monitoring program was established in Livermore Valley. This program in 1955 and 1956, comprised the collection and analysis of water samples from 32 wells. Data for these wells are presented in Appendix A.

Ground waters in the central and southern portion of the valley are replenished from percolation of good quality flood waters and, in general, contain total dissolved solids of less than 400 ppm. and boron concentrations of 0.5 ppm. Total hardness is generally less than 300 ppm.

Ground water in the northern and eastern portions of Livermore Valley contains higher concentrations of total dissolved solids and boron, and is generally of a harder nature. Boron is particularly notable in this regard and is often present in excess of 2.0 ppm in well waters in the eastern portion of the valley. Ground water with high boron concentration usually contains high concentrations of total dissolved solids, and chlorides. Occurrence of harmful concentrations of boron has caused economic loss because wells have had to be abandoned and damage has resulted to soils and crops. Comparison of analyses for samples collected between 1953 and 1956 indicates some cyclic change in mineral concentration but no definite trend is yet apparent. Mineral analyses of samples collected during the reporting period are presented in Appendix B.

Nitrate concentrations in water from several wells in the vicinity of the City of Livermore exceed the limit recommended by the State Department of Public Health.

Central Coastal Region (No. 3)

The Central Coastal Region extends from the southern boundary of Pescadero Creek Basin, in Santa Cruz County, to the northeastern boundary of Rincon Creek Basin in Ventura County. It averages about 50 miles in

width and occupies an area of approximately 11,000 square miles.

Valley areas in the Central Coastal Region receive only light to moderate rainfall, and depend largely on ground water as a source of supply. Approximately 90 per cent of the water supply of this region, especially that used for irrigation, is obtained from ground water sources.

Nineteen ground water basins, eighteen of which support an intensive agricultural economy, have been identified in the Central Coastal Region. To date, five ground water basins or areas have been included in the ground water quality monitoring program for this region.

Pajaro Valley

The Pajaro Valley area comprises about 75 square miles of the Pajaro River Drainage Basin. This valley consists of the drainage area of the Pajaro River below Pajaro Gap, including the northern extremity of Monterey County, a small part of the northwestern corner of San Benito County, and the southern portion of Santa Cruz County.

Principal ground water aquifers of the Pajaro Valley area are composed of continental and marine sediments with overlying blue clay deposits that act as confining strata to the primary aquifers of the pressure zones. The ground water basin underlying Pajaro Valley includes two confined ground water bodies which underlie the valley floor, and a free ground water body which overlies the confined ground waters. An unconfined ground water body underlying the bench lands adjacent to the valley serves as a forebay to the confined aquifers.

Nearly all the water for irrigated lands in the area and a substantial portion of the water utilized by the City of Watsonville for municipal purposes is pumped from the confined ground water bodies. Because of the potential threat of sea-water intrusion into ground waters adjacent

to Monterey Bay. Pajaro Valley was included in the ground water quality monitoring program. During the years 1955 and 1956 the monitoring program in this area consisted of the collection of samples from 24 wells. Data for the monitored wells are presented in Appendix A.

Mineral analyses of samples from monitored wells are presented in Appendix B. Ground waters from Pajaro Valley contain moderate concentrations of calcium and bicarbonates and low concentrations of magnesium, sodium and boron. Chlorides are not present in significant amounts in ground waters of Pajaro Valley, except in a limited zone of marine intrusion adjacent to Monterey Bay. This intrusion occurs as highly saline perched water and is a threat to the quality of underlying ground water supplies.

Comparison of analyses for the period of record shows little change in quality characteristics, except for a gradual increase in chloride concentration in water samples from several wells. Chloride concentrations increased in well No. 12S/1E-10H1 from 276 ppm in June, 1955, to 357 ppm in November, 1955. Wells No. 13S/2E-7B1 and No. 13S/2E-7B2 showed chloride concentrations of 396 ppm and 620 ppm respectively in June, 1955, and increased to 458 ppm and 762 ppm in November, 1955.

Salinas Valley

Salinas Valley is approximately 80 miles long, varies from two to ten miles in width, and contains 660 square miles of highly productive irrigated and dry-farm lands. The ground water basin which underlies this valley is the largest in the Central Coastal Region.

The valley fill of the lower Salinas Basin, comprising those lands flanking the Salinas River below Wunpost, is an extensive body of alluvium with considerable ground water storage capacity.

Alluvial and terrace deposits, composed of gravel, sand, silt

and clay in various combinations, cover Salinas Valley in thicknesses up to 300 feet. Alluvial fans occur along both sides of the valley with those on the west side generally having the steeper slope. The alluvium and terrace materials provide the principal supply of ground water to shallow wells throughout the lower basin. It is probable that most deep wells in Salinas Valley principally extract ground water from sediments of the Paso Robles formation. In the lower basin near Salinas, beds of blue clay exist of sufficient thickness and areal extent to confine the ground water in the underlying aquifers.

The only source of irrigation water supply in Salinas Valley is the ground water reservoir formed by the valley alluvium. The high degree of agricultural development on the valley floor lands, from Monterey Bay southerly to San Ardo, results from the availability of ground water resources in this area. The yield of wells in the area varies from approximately 200 gpm to over 3,000 gpm.

Ground waters in Salinas Valley may be grouped by mineral characteristics into three broad classes as to source: (1) those coming principally from Santa Lucia Range, (2) those from Diablo Range, and (3) those resulting from commingling of water from both sources. Ground waters recharged from runoff from the Santa Lucia Range vary in quality from excellent to good, those recharged from Diablo Range vary from fair to unusable, while those recharged from commingling of both sources range from good to fair.

The ground water quality monitoring program for Salinas Valley is concerned primarily with the lower portion of the valley in close proximity to Monterey Bay. In this area a serious ground water problem, caused by intrusion of sea water into overdrawn fresh water aquifers, exists. Intrusion extended 1-3/4 miles inland from the bay shore in 1945, and covered an area of approximately 6,000 acres. Many of the wells within the area contained

water which was either unfit for irrigation or near the upper limit for safe use. Data from monitored wells in Salinas Valley are presented in Appendix A.

Mineral analyses of samples collected from monitored wells during 1955 and 1956 are presented in Appendix B. Comparison of analyses of samples collected from most wells during this period shows no significant change in mineral characteristics. However, in well No. 16S/4E-24B1, concentration of total dissolved solids increased from 1080 to 1470 ppm between July, 1955 and August, 1956. The increase appears to be fairly uniformly distributed among the several constituents tested, although nitrate concentration in water from this well increased significantly from 33 ppm to 111 ppm between the above mentioned dates. In contrast to the just cited instance, a decrease in total dissolved solids was noted in analyses of water from several wells. Most notable among these is well No. 18S/6E-1M1 where total dissolved solids decreased from 1100 ppm to 741 ppm between August, 1953, and July, 1956.

Carmel Valley

Carmel Valley, an area of about three thousand acres of valley floor land, is located approximately four miles south of the city of Monterey. It is a long alluvium filled valley, extending eastward from the coast a distance of 23 miles. The portion of the ground water basin underlying Carmel Valley included in the monitoring program is situated near the City of Carmel.

Ground water occurs in unconsolidated alluvium, which averages about 100 feet in thickness and attains a maximum thickness of approximately 125 feet adjacent to the coast. The alluvium consists mainly of sand and gravel with small discontinuous lenses of silt or clay.

Practically all the valley, except for a small lagoon, is utilized for truck crops. Numerous wells throughout the valley supply local domestic and irrigation needs.

A seaward hydraulic gradient exists over the entire basin and there is at present no evidence of degraded ground water in the basin. The possibility of sea-water intrusion into the fresh water aquifer near Carmel Bay, however, prompted the inclusion of this area in the ground water quality monitoring program since, as in other coastal basins, saline intrusion could occur if the present seaward hydraulic gradient were reversed.

In 1955 and 1956 water samples were collected from eight wells which are situated in the coastal segment of the valley. Data on these wells are presented in Appendix A.

Mineral analyses of samples collected from these wells are presented in Appendix B. The ground waters of Carmel Valley are of calcium bicarbonate type and are generally of excellent mineral quality. There was no significant variation in mineral characteristics of water sampled from the wells during the period of record, and no evidence of sea water intrusion.

Santa Maria Valley

Santa Maria Valley forms an area of about 25,000 acres of rich agricultural soils. It lies in portions of San Luis Obispo and Santa Barbara Counties. The valley is intensively farmed to numerous varieties of irrigated truck and field crops.

Santa Maria Valley is bounded on the north by the San Rafael Mountains and on the south by the Solomon and Casmalia Hills. These ranges are composed of essentially nonwater-bearing rocks, which also underlie the Santa Maria Valley and bound it on the north, east and south. The valley area consists mostly of broad terraced uplands and alluvial plains adjacent to the Santa Maria and Sisquoc Rivers. Beneath the uplands, and the plains lying along the flanks of the ranges, are the unconsolidated or water-bearing materials which have been deposited on the consolidated rocks. These unconsolidated deposits

attain a maximum thickness of about 3,000 feet and contain a single large body of ground water. A portion of the ground water zone, near the coast, is confined beneath a layer of silt and clay covering an area of about 30,000 acres. Ground water throughout the remainder of the Santa Maria area is unconfined. Recent alluvium is the most permeable of the unconsolidated deposits and yields water to many wells at rates of more than 1,000 gallons per minute per well.

Ground water supplies nearly all the irrigated acreage, the major industries and all of the public water supply systems in the area. Irrigated truck farming makes the greatest demand upon the ground water reservoir. Ground water supplies are used in oil field operations and in all refining processes at manufacturing plants in Guadalupe and Santa Maria.

Santa Maria Valley is one of the principal petroleum producing and refining areas in the Central Coastal Region. Most of the brine waste water produced in this field is disposed of by pipe line to the ocean. There exists, however, the possibility of degradation of ground water by accidental spillage, defective casings, or improper use of sumps. Accordingly, this area has been included in the ground water quality monitoring program.

During 1955 and 1956 samples were collected from fifteen wells in Santa Maria Valley. Data on these wells are presented in Appendix A.

Analyses of samples from the monitored wells are presented in Appendix B. Ground water of Santa Maria Valley is similar in quality to water of the Santa Maria River, which contains a blend of high concentrations of sulfates from Cuyama River and low total mineral solubles from Sisquoc River. Total dissolved solids range from 600 to 1,000 ppm. Chlorides are about 10 to 700 ppm. Comparison of analyses indicates there was no significant variation in mineral characteristics of water during the four-year period 1953-1956.

Cuyama Valley

Cuyama Valley is a broad alluvial plain, about 12 miles long and five miles in width, situated in the midcourse of the Cuyama River. It occupies portions of four counties; Santa Barbara, Ventura, Kern, and San Luis Obispo.

Unconsolidated clay, silt and gravel, 3000 to 4000 feet in total thickness, compose the alluvium, terrace deposits, and older continental deposits that supply nearly all the water to irrigation wells. Available data indicate that the development of ground water for irrigation increased from essentially nothing in 1938 to about 40 wells that irrigated more than 5,000 acres in 1946.

The discovery of three major oil fields, Morales, Russel Ranch, and South Cuyama, during 1948, changed the economy of Cuyama Valley, which prior to that time was almost totally agricultural. As in other areas in the State, the development of oil fields and production of oil and waste water poses problems in connection with maintenance of the quality of ground water supplies. A ground water monitoring program was established to detect any changes in the quality of ground waters which may be due to operations of the newly developed oil fields or to other causes.

Observation wells selected for inclusion in the monitoring program are situated throughout the valley, including areas where there are no oil field operations at present. This widespread observation grid was established since available data indicated that many natural springs within the valley produce water much inferior in quality to that obtained from river-fed underground reservoirs. It is believed that water from this source should also be considered as a potential degradant and that areas receiving inflow from this source should be monitored. Data on the monitored wells are presented in Appendix A.

Ground water in Cuyama Valley is only fair in quality and is generally high in total dissolved solids. In general the water is hard and quite high in sulfate. Calcium and magnesium are the predominent cations. Ground water in some portions of the valley contains high concentrations of boron. Although containing relatively large amounts of dissolved solids, most of the waters can be used for irrigation since total dissolved solids are comprised largely of calcium and sulfate ions. These two ions precipitate readily in the soil solution and are less harmful than salts which do not have these characteristics.

Mineral analyses of water from the monitored wells are presented in Appendix B. A study of the analyses of samples collected during this reporting period indicated there was no significant variation in quality in most of the sampled wells. However, there was a slight increase in concentrations of sodium and chloride in well No. 10N/27W-11C1. Sodium content of water from this well increased from 319 ppm in August, 1955, to 336 ppm in June, 1956, and chlorides increased from 64 to 90 ppm during the same period.

Los Angeles Region (No. 4)

The Los Angeles Region is bounded on the north by the south-eastern boundary of Rincon Creek Basin in Ventura County and on the south by the Los Angeles-Orange County boundary, a distance of approximately 100 miles. It extends from the Pacific Ocean inland to the drainage divide, an average distance of 50 miles, and includes an area of approximately 4,260 square miles. Broad coastal plains and inland valleys cover about one-half of the area, the balance being foothills and rugged mountainous areas.

The Los Angeles Region includes most of the highly developed Los Angeles Metropolitan Area, and the major portion of Ventura County. This region includes areas devoted to agriculture, and within metropolitan areas includes extensive residential developments and a large, rapidly growing industrial complex.

Within the Los Angeles Region, 14 ground water basins and 40 sub-basins have been identified. At present, however, only five basins or sub-basins are included in the monitoring program. They are Oxnard Plain Basin, Main San Gabriel Basin, Central Coastal Plain Pressure Area, Los Angeles Forebay Area, and West Coast Basin. The West Coast Basin contains three monitoring areas: Athens Area, Torrance Area, and the Area of sea-water intrusion.

Oxnard Plain Basin

Oxnard Plain Basin is located in the coastal portion of Ventura County, extending about 10 miles along the coast with an average width of about 5 miles, and includes an area of about 46,400 acres. The basin is bounded on the north by the Santa Clara River, on the east by the foothills, and on the south and west by the Pacific Ocean.

Extensive alluvial deposits known as the "Oxnard Aquifer" constitute the principal source of ground water in the Oxnard Plain Basin. The economy of the area is supported by irrigated agriculture and allied packing and processing plants, oil production and refining, and military establishments. No imported water is used in this area, the entire supply being secured from local resources.

This area was included in the ground water monitoring program in order to observe changes in the quality of ground water which result from intrusion of sea water, and to determine the extent of saline advance in the vicinity of Port Hueneme. Data on wells included in the program are presented in Appendix A.

Mineral analyses of samples obtained from monitored wells are presented in Appendix B. Predominant ions in the waters of the monitoring wells are calcium and sulfate. Total dissolved solids concentrations exceeding

the drinking water standards were found in water from wells 1N/22W-21L1, 1N/22W-21L2, and 1N/22W-3F4, with concentrations of 4697, 3261, and 1091 ppm, respectively. The first two wells are municipal wells east of the City of Port Hueneme and the last well is in the City of Oxnard.

Total dissolved solids in the ground water from remaining monitor wells varied between 756 and 956 ppm. Increases in total dissolved solids were generally noted in the well waters during the four years, from 1953 through 1956. However, in some cases, small decreases were noted. Water from the two municipal wells east of the City of Port Hueneme showed an increased concentration of total dissolved solids of 3,798 and 2,396 ppm, in two years. The character of the water in these two wells was calcium chloride while water from the other monitoring wells in the basin contained, in general, calcium sulfate waters.

Chloride concentrations were 2,134 and 982 ppm in water from wells 1N/22W-21L1 and 1N/22W-21L2, respectively. These two wells were the only ones in the monitoring program where the chloride concentrations were above the recommended limit for domestic use. The highest chloride concentration in water from the other monitoring wells did not exceed 58 ppm, although small increases in chlorides were noticed in waters from most wells. Percent sodium in water from the monitoring wells varied between 9 and 36. The highest concentration of fluoride was 1.3 ppm at well 1N/22W-19B3, located northwest of Port Hueneme in the sand dunes about one-quarter mile from the ocean. Well 1N/22W-7D1 located one-half mile from the ocean contained waters with a fluoride concentration of 1.1 ppm. The highest nitrate concentration in waters analyzed was 22 ppm from well 1N/22W-3F4 in the center of the City of Oxnard.

Ground waters in the monitored portion of Oxnard Plain are very hard, the total hardness varying between 388 and 595 ppm. The above range excludes

the two municipal wells in Port Hueneme where the hardness is 1,758 and 3,300 ppm. Concentrations of sulfates ranged between 345 and 536 ppm, which exceeds the recommended limit of 250 ppm in the United States Public Health Service Drinking Water Standards.

West Coast Basin

West Coast Basin is located in the southern part of Los Angeles County. It is bounded on the north by the Ballona Gap, and on the east by the Newport-Inglewood fault structure, which cuts through the Baldwin Hills, Dominguez Hills, and Signal Hill. The western boundary is the coast line of Santa Monica Bay, San Pedro Bay, and the divide of the Palos Verdes Hills. The basin is about 19 miles long, has an average width of 9 miles, and includes an area of 101,000 acres. About 80 per cent of the surface is a gently rolling, slightly eroded marine plain, while bordering highlands constitute the remainder of the area. Surface elevations range from sea level to almost 1,500 feet above sea level.

The West Coast Basin has experienced radical changes in economy in the last 20 years. Cultural development of this basin has changed from that of a typically agricultural area to that of a highly developed metropolitan and industrial area. Oil refining, aircraft, and related industries are concentrated in this basin. Population has increased from 317,000 in 1940 to 549,600 in 1950, a 70 per cent increase.

Development of the area has resulted in increasing demands upon the ground water supply. The subsequent overdraft of the basin has necessitated importing additional water supplies. Despite the importation of water from the Owens River system and the Colorado River to West Coast Basin, the overdraft conditions still exist.

The threefold purpose of the program in the West Coast Basin is to monitor (1) the Area of Sea-Water Intrusion; (2) the effects of industrial waste

discharges on ground water quality in the Torrance area, and (3) the effects of industrial waste discharges on ground water quality in the Athens area. For clarity, each of these areas is discussed separately.

Area of Sea-Water Intrusion. There are several distinct aquifers in the West Coast Basin merging about 1 mile inland from the coast at Santa Monica Bay. As a result, one continuous aquifer extends outward from the coast and under Santa Monica Bay. Extensive pumping in the inland areas has reduced the pressure near the above line, in these aquifers reversing the natural seaward gradient. Ground water supplies near the shore became noticeably saline, with chloride concentrations above 18,000 ppm in some wells, as ocean water intruded into the aquifer designated as the "Merged 400-Foot Gravel and Silverado Water-Bearing Zone".

Wells used in this program to monitor sea-water intrusion from El Segundo south to Redondo Beach penetrate, and are perforated in, the "Merged 400-Foot Gravel and Silverado Water-Bearing Zone". Some wells reported previously have been abandoned, requiring changes in the monitoring program; well 3S/14W-30H2 has been substituted for well 3S/14W-30H1, and well 3S/15W-12G1 has been substituted for well 3S/15W-12G2. These additional monitor wells are adjacent to those previously reported. Data on wells included in the monitoring program are presented in Appendix A.

Since 1950, the Los Angeles County Flood Control District has conducted experiments in injection of treated Colorado River water into the water-bearing zone through wells in order to retard and prevent sea-water intrusion in the Manhattan Beach-Hermosa Beach area. This project, which has been extended beyond the experimental stage, has achieved success in preventing sea-water intrusion in the localized area of the former experimental project. Nine injection wells have been in almost continuous operation since 1953. Lines of equal chloride concentration plotted for the region indicate that the line of

injection wells, located about 2,000 feet inland, has retarded sea-water intrusion landward of the wells, but intrusion is continuing far inland on either end of the recharge area. Monitoring well 3S/14W-30H2 is in the area protected by the recharge water. Well 3S/14W-31A1 is in the region of intrusion by-passing the recharge line.

Mineral analyses of water from the monitored wells are presented in Appendix B. These analyses indicate that the highest chloride concentration, 285 ppm, was noted in water from well 3S/15W-12G1. This well was not included in the previous report because of the extreme fluctuation in chloride concentration of as much as 200 to 300 percent; however, the nearest monitoring well 3S/15W-13R2, had chloride concentrations ranging up to 279 ppm during this reporting period. This was an increase of about 50 ppm since the previous monitoring period. Increases in chlorides were noted in the other monitoring wells also. The per cent sodium in the monitored wells increased slightly during 1955 and 1956.

Torrance Area. This area occupies approximately 45 square miles of the coastal plain and is bordered by 190th Street on the north, Pacific Coast Highway on the south, Main Street on the east, and the Pacific Ocean on the west. The area is extensively developed with industries engaged in oil pumping, oil refining, and related activities. Six wells are used to monitor the effect of industrial waste discharges on ground water quality in this area. Data on these wells are presented in Appendix A.

Mineral analyses of water obtained from the monitored wells are presented in Appendix B. The highest total dissolved solids found was 1,327 ppm with values of about 400 ppm common in the western side of the Torrance area. No trend in total dissolved solids was discernible between 1953 and 1956. In 1956 water from well 4S/13W-6Q1 had the highest chlorides. The range in

chloride concentration was between 78 and 195 ppm. No increase in chloride concentration was noted in waters from the sampled wells during this reporting period. The per cent sodium in the ground waters increased. In general, the ground waters are suitable for both domestic and agricultural use, although some of the waters are very hard.

Athens Area. This area comprises about 50 square miles located northeast of the City of Gardena and includes the Rosecrans Oil Field. A cooperative industrial waste survey of the area was made by a committee comprised of representatives of interested agencies and political entities. The survey revealed evidence that past discharges of industrial wastes had contributed to the pollution of ground water in the area. The purpose of the monitoring program in this area is to determine the effects of industrial waste discharges on ground water quality.

The monitoring program in the Athens area comprises five wells. Data on these wells are presented in Appendix A.

Mineral analyses of water from the monitor wells are presented in Appendix B. Total dissolved solids in the well waters ranged from 346 ppm to 1,170 ppm during 1955-1956. The highest concentration was found in water from well 3S/14W-22R2 where total dissolved solids decreased from 1,170 ppm in 1955 to 715 ppm in 1956. Total dissolved solids in the water from other wells decreased as much as 350 ppm during the two-year reporting period.

Chloride concentration in waters from well 3S/14W-22R2 ranged between 183 and 403 ppm during 1955 and 1956 and at times exceeded the limits recommended for drinking water. Water from this well decreased in chloride concentration from 403 ppm in 1955 to 183 ppm in 1956. Decreasing chloride concentrations were also noted in other well waters. Nitrates have increased in the water from all the monitoring wells. The largest increase noted was in

water from well 3S/14W-19K1 where nitrates increased from 45 ppm in 1955 to 70 ppm a year later. These concentrations of nitrates are in excess of the limit recommended for domestic use. The water in well 3S/14W-22R2 is very hard. Total hardness varied between 521 and 320 ppm during this reporting period. In this monitored area the ground water is generally improving in quality with the exception of increasing nitrates.

Central Coastal Plain Pressure Area
and Los Angeles Forebay Area

The Central Coastal Plain Pressure Area and Los Angeles Forebay Area form a roughly triangular area of approximately 220 square miles, extending about 15 miles along the Los Angeles-Orange County line and about 25 miles northwesterly to the vicinity of the Santa Monica Mountains and San Rafael Hills. The surface of the area is a gently rolling, slightly eroded marine plain.

Ground water is unconfined and occurs at relatively shallow depths in the Los Angeles Forebay Area. Clay strata overlying the aquifers in the Central Coastal Plain Pressure Area confine the ground waters under hydrostatic pressure. Imported water from Owens Valley and the Colorado River supplements the ground water supply in this area.

Much of the industrial economy of the Los Angeles Region is situated within the Los Angeles Forebay Area and the northern portion of the Central Coastal Plain Pressure Area. Remaining portions of these areas are largely comprised of residential and commercial developments, with some agriculture in the southern portion of the Central Coastal Plain Pressure Area. Several active oil fields are located in these areas.

An investigation of industrial waste pollution of water wells in the southeast portion of metropolitan Los Angeles was conducted by the Los Angeles Regional Water Pollution Control Board in 1950. The water from the

thirty-three water wells was found to have hydrocarbon tastes and odors and/or increased mineralization. Although findings in the above investigation were not conclusive, the data indicates that the source of degradation was waste discharges which eventually migrated to the deeper water-bearing zone, possibly via defective or abandoned wells. These waste discharges have been discontinued and six wells in the area have been included in the monitoring program in order to observe the duration of the degradation effects of past discharges. Data on the wells included in the monitoring program are presented in Appendix A.

Mineral analyses of waters from monitored wells are presented in Appendix B. Waters in these wells are calcium bicarbonate in character. Total dissolved solids ranged from 371 to 522 ppm, averaging 440 ppm. Slight increases were noted in total dissolved solids, during the past two years, in water from most of the wells. The highest chloride concentration was 100 ppm in water from well 2S/13W-28N2. Slight increases in chloride concentrations were noted in waters sampled from all wells in the monitoring program. Increase in the per cent sodium was recorded in water from most wells. Ground waters were of good quality for domestic and irrigation use; however, these waters are very hard, with total hardness ranging generally between 200 and 638 ppm.

Main San Gabriel Basin

San Gabriel Basin is located in eastern Los Angeles County and includes approximately 73,400 acres of valley land lying between the San Gabriel Mountains and the Merced and Puente Hills. The basin extends about 15 miles along the base of the San Gabriel Mountains and is about 10 miles wide.

This valley was, in the past, extensively developed as an agricultural area. In recent years, however, there has been a remarkable increase in residential and industrial development, which has all but replaced the agricultural economy.

Increasing demand for water, created by continued development, and reuse of water has resulted in an area of potential adverse salt balance. The purpose of the monitoring program in this basin is to detect the existence of any adverse salt balance and to locate areas of water quality problems. Data on monitored wells are presented in Appendix A. Mineral analyses of samples obtained from the monitored wells are presented in Appendix B.

Predominant ions in the waters of the monitoring wells were calcium and bicarbonate, except in well 1S/12W-10E1, which contained sodium bicarbonate water, and well 1S/10W-19N1, which contained a calcium-sodium sulfate water. Total dissolved solids in the water from the monitored wells ranged between 112 and 870 ppm. Comparison of analyses showed that there was an increase in the total dissolved solids in all the water samples collected during the period. Analyses of water from well 1S/10W-19N1, the well with the high value of total dissolved solids, show an increase in dissolved solids from 506 ppm in 1954 to 870 ppm in 1956.

Chlorides varied between 4 and 220 ppm in the monitored waters during the two year period, 1955 to 1956. Increases in chlorides were noted in most of the well waters although some decreases were noted. Nitrate concentration in well No. 1S/10W-10C1 was 64 ppm, which is above the recommended limit for domestic use set by the State Department of Public Health. Analyses show a steady increase of sodium from 10 per cent in 1954 to 39 per cent in 1956 in well No. 1S/10W-19N1. The highest flouride concentration of water samples in the area was 1.2 ppm at well 1S/2W-10E1. No trend in flouride concentration could be determined. In general, ground waters in the basin are suitable for both irrigation and domestic uses; the exception being the waters in well 1S/10W-10C1 which are considered unsuitable for domestic use due to the concentration of nitrates.

Central Valley Region (No. 5)

The Central Valley Region extends from the California-Oregon line southward to the Tehachapi Mountains and from the crest of the coastal range on the west to the crest of the Sierra Nevada on the east. It averages 120 miles in width and is more than 500 miles in length. Because of its size and economic importance the Central Valley Area has been termed the "Great Basin" of California. It occupies an area of approximately 59,000 square miles, and includes about 38 per cent of the land surface and nearly 44 per cent of the valley and mesa lands of the state.

The portion of the Great Basin which lies north of an east-west line drawn just south of the City of Sacramento is known as the Sacramento Valley. The valley comprises an area of approximately 5000 square miles and contains the second largest ground water reservoir in the State.

The San Joaquin Valley comprises about 6,300,000 acres of irrigable soils and extends from south of Bakersfield to the vicinity of Stockton on the north. About two-thirds of the valley floor area of the Great Basin is included in the San Joaquin Valley. The alluvium which provides the ground water storage space underlying this valley comprises the largest ground water reservoir in the State.

Ground water in the Central Valley Region is stored primarily in the extensive sand and gravel deposits which underlie the Sacramento and San Joaquin Valleys. Appreciable quantities also occur in the fractured metamorphic and granitic rocks of the upland and mountainous areas.

Twenty-nine ground water basins have been identified in the Central Valley Region. Upper Lake Valley and Kelseyville Valley in Lake County and portions of the basin which underlies the floor of the Sacramento and San Joaquin Valley have been included in the monitoring program. The Sacramento

and San Joaquin Valleys contain the largest bodies of usable ground water in the State. Ground water has been extensively developed, especially in the San Joaquin Valley, for irrigation and numerous other beneficial uses including municipal, domestic, and industrial. Large scale planned development and utilization of the ground water storage space underlying the Central Valley, and the presence of numerous potential causes of water quality impairment, require that constant vigilance be maintained to assure the continued usefulness of this important source of water supply.

The quality characteristics of ground waters of the Central Valley area are very similar to those of the surface waters which are the sources of replenishment. Ground waters in basins recharged from east side streams have low concentrations of mineral solubles and are of excellent mineral quality. East side ground waters are predominantly calcium bicarbonate in type and contain total dissolved solids in amounts ranging from about 100 to 400 parts per million. Boron is generally found in concentrations less than 0.1 parts per million, and per cent sodium is about 40.0. However, some east side wells yielding water from depths greater than 1,100 feet often produce highly mineralized water.

Ground waters from the west side of San Joaquin Valley are predominantly calcium and sodium sulfate type waters and contain concentrations of total dissolved solids ranging from about 800 to 2,000 parts per million. The deeper wells yield water of the poorest quality and water temperatures as high as 114°F have been recorded. Sodium in these well waters is frequently in the order of 80 to 90 per cent of base constituents and boron is often present in quantities considered extremely toxic to plants. Nearly all west side ground waters have a brackish taste and may be unpalatable.

Calcium and magnesium are the dominant cations in waters in the east side and also to a large degree in ground water of the west side. They

are, however, generally subordinated by sodium toward the trough of the Central Valley from Sutter Basin south to Buena Vista Lake, west of Bakersfield. Chloride is often the principal anion in the trough of the Central Valley from Sutter Basin south to Buena Vista Lake, west of Bakersfield. Chloride is often the principal anion in the trough area of the San Joaquin Valley, and ground waters between depths of about 300 feet and 1,000 feet generally are lower in mineral content than are waters found at shallower depths.

Upper Lake Valley, Lake County

Upper Lake Valley borders on and lies north of Clear Lake. The valley extends about seven miles northerly from the shore line, and includes an area of about 10,500 acres.

Geologic formations of Upper Lake Valley include sediments, beds of volcanic fragments which are probably the same age as the sediments, and clays, sands and gravels, including recent alluvium. Both free and confined water conditions are found in Upper Lake Valley. Confined water exists beneath a blanket of sandy and silty clay which acts as a capping bed for an artesian aquifer of sand and gravel.

Wells in Upper Lake Valley yield an average of 340 gallons per minute in the free ground water zone and about 230 gallons per minute in the confined water zone.

There is moderate to extensive development of ground water in Upper Lake Valley for irrigation, domestic and stock watering needs and only limited development for municipal and industrial needs. The valley is devoted primarily to irrigated and dry-farmed lands growing fruit and miscellaneous field crops.

Upper Lake Valley was included in the monitoring program because of the presence of high boron which, in the future, may become a general

problem, in the western and southern portions of the valley. Data on the monitored wells are presented in Appendix A.

Mineral analyses of samples collected from the monitored wells are presented in Appendix B.

There are no major water quality problems known in Upper Lake Valley, other than the relatively high boron content of some wells. Geological information indicates that the boron probably originates from juvenile water which rises to the surface from great depths through geological faults and fissures.

A study of the analyses of samples collected from the monitored wells reveals little change in character or concentration of mineral constituents for the period 1953 through 1956. Partial analyses of the samples collected during 1955 and 1956 indicate chlorides ranged generally less than 10 ppm while sodium did not exceed 15 ppm. No significant increase in boron was noted in waters sampled from monitored wells in Upper Lake Valley during 1955 and 1956.

Kelseyville Valley, Lake County

Kelseyville Valley is bounded by Clear Lake on the north and extends southerly about seven miles to the mountains of the Coast Range. The valley is a gently rolling plain sloping from south to north and including approximately 19,000 acres.

Kelseyville Valley is composed of formations similar to those in Upper Lake Valley, namely: beds of volcanic fragments, clays, sands, and gravels, including Recent alluvium. The sand and gravel deposits usually occur as stringers while the clay beds are generally continuous. Both free and confined ground water occurs in the valley. The free ground water, or forebay zone, exists in the southern part of the valley while confined ground water underlies the portion of the valley bordering on Clear Lake.

The average yield of wells in Kelseyville Valley is about 375 gallons per minute in the free zone and about 400 gallons per minute in the confined zone.

There is extensive development of ground water for domestic, irrigation, and stock watering needs, and only limited development for industrial needs. The land is devoted primarily to the production of fruit and miscellaneous field crops, both irrigated and non-irrigated.

A ground water quality monitoring network of six wells was established in this area to maintain a check on water quality conditions. Data on the monitored wells are presented in Appendix A.

Analyses of ground water in Kelseyville Valley collected during 1955 and 1956 indicate this water is generally good to excellent in quality. Results of analyses of ground waters from the monitored wells are presented in Appendix B. Comparison of these analyses shows little significant change in quality characteristics since 1953. Maximum concentrations of sodium and chloride were 33 ppm and 21 ppm respectively from wells sampled in 1955 and 1956.

Sacramento Valley

At present, two areas in Sacramento Valley have been included in the monitoring program, the Sutter-Yuba area and Sacramento County. The Sutter-Yuba area was reported previously and Sacramento County was added to the program in 1955.

Sutter-Yuba Area. The area of Sutter County included in the ground water quality monitoring program is situated west of Feather River, east of Sutter Bypass, and south of Sutter Buttes. Also included is the portion of Yuba County lying in the Sacramento Valley floor from Feather River on the west to a line marking the approximate limit of the area served by ground water, near the base of the foothills on the east. This area extends north and south for a distance of about 39 miles, and varies in width from about 6 to 19 miles.

Ground water in the Sutter-Yuba area is stored primarily in the extensive sand and gravel deposits which are overlaid by recent alluvial deposits. The wells in the area yield from 700 to 900 gallons per minute at depths of about 180 to 325 feet.

The area supports a highly developed agricultural economy devoted to production of deciduous fruits as well as a wide variety of truck and field crops, rice and pasture. Approximately two-thirds of the acreage under irrigation obtains its water supply from wells.

The existence of high chloride concentrations in portions of the Sutter-Yuba area prompted its inclusion in the ground water quality monitoring program. During 1955 and 1956 samples were collected from 42 wells in the Sutter-Yuba area. Data on the monitored wells are presented in Appendix A.

Mineral analyses of samples collected from monitored wells in the Sutter-Yuba area during 1955 and 1956 are presented in Appendix B. The mineral quality of native ground water supplies is excellent or good in all zones of the Sutter-Yuba area, except in that portion of the west side zone south of Oswald Road where abnormally high chloride concentrations are found. High chloride concentrations also occur locally near the town of Robbins, some seven miles west of Nicolaus. Studies indicate that the high chloride concentrations in the fresh water aquifers may be caused by upward migration of deep seated connate brines underlying the area. There is a probability that upward movement of the brines may be accelerated when the water table is lowered by heavy irrigation pumping.

Comparison of the analyses of samples collected during the reporting period indicates there was little change in quality characteristics for the wells which were sampled. There was, however, a moderate increase in chloride content in samples from well No. 13N/3E-14R1, where the chloride concentration increased from 490 to 650 parts per million between September, 1953, and

October, 1955. The maximum values, as determined from partial analyses of samples from wells in the Sutter-Yuba area during 1955 and 1956, for chloride concentrations and per cent sodium was 1020 ppm and 76% respectively.

Sacramento County. Most of Sacramento County is included in the ground water quality monitoring program. The area excluded is that lying along the eastern boundary of the County, underlain by materials which yield negligible quantities of ground water.

The deposits of major importance as a source of ground water supply in Sacramento County include unconsolidated sands, silts, and gravels. The Recent alluvium comprises sands, gravels and silts in active stream channels and silts in areas subject to overflow. These latter deposits generally have the ability to transmit water but in most places are above the water table.

Hydrologic characteristics of the water-bearing formations underlying Sacramento County are extremely variable. Perched water bodies are common in some areas, due to lenses of impermeable material. Aquifers, however, are of such areal extent that wells having large specific capacities are found throughout most of the area.

Since there are localized areas with water quality problems, a ground water monitoring program was established. Ground water samples were obtained from 35 wells in 1955, and 32 wells in 1956. Data on the monitored wells are presented in Appendix A.

The results of mineral analyses of samples from monitored wells are presented in Appendix B. Ground water of excellent mineral quality occurs generally throughout the county. Analyses of samples collected from wells in the area during 1955 and 1956 indicate that total dissolved solids are generally less than 350 ppm. The most notable exception appears in well No. 9N/4E-8L1, where total dissolved solids were 577 ppm during November, 1955.

The waste discharge from a large industry in the eastern portion of the county poses a potential threat to ground water quality. The wastes include solutions of potassium perchlorate ($KClO_4$) and ammonium perchlorate (NH_4CLO_4) and tests for these constituents are included in the analyses. Analyses of samples collected from well No. 9N/7E-28B1, which supplies the above industry, showed an increase in the perchlorate ion from 2 ppm in November, 1955, to 18 ppm in May, 1956.

San Joaquin Valley

The San Joaquin Valley, essentially a water deficient area, is vitally concerned with existing and probable ground water quality problems. Monitored areas have been established to evaluate these problems and are discussed in the following paragraphs.

San Joaquin County. The monitored area in San Joaquin County includes about 550 square miles of valley floor land. The area extends from the Sacramento County line on the north to the Stanislaus County line on the south, and ranges in width from about fourteen to twenty miles.

For purposes of ground water study, the geologic formations underlying the area may be divided into the semi-consolidated and unconsolidated deposits, which are the principal source of ground water, and consolidated basement complex of minor importance as a source of ground water. Fresh water in the water-bearing deposits is largely unconfined, although local pressure effects may occur.

The deep wells, in and adjacent to the city of Stockton, have experienced wide fluctuations in water levels in recent years due to heavy pumping and a growing draft on ground water. Shallow wells with low yields, generally less than 150 feet in depth, are used primarily for domestic purposes.

Within the City of Stockton, ground water is used primarily for

municipal and industrial purposes. Areas outside the city are almost exclusively devoted to agriculture and utilize large quantities of ground water for irrigation. Increasing population, and expansion of industrial facilities in the area, causes a constantly growing draft on ground water.

An investigation by the Division of Water Resources (1955) determined that saline connate water exists in a localized area west of Stockton, in sediments east of Stockton, and in formations underlying the City of Stockton. An impediment to ground water exists just west of Stockton. This impediment appears to have effectively prevented significant movement of the saline ground water which underlies the Delta, into the fresh ground water underlying Stockton. However, the efficiency of this impediment is doubtful if the hydraulic gradient across it were increased by future overdraft.

A monitoring grid consisting of 16 wells was established in the area to detect and trace movement of the poor quality waters occurring west of Stockton and to ascertain degradation occurring as a result of abandonment of wells. Ten of the monitor wells are located in a 27 square mile area which includes the City of Stockton. The remaining six wells are distributed throughout the area. Municipal, industrial and irrigation wells of heavy draft, as well as domestic type wells are included in the monitoring program. Data on these wells are presented in Appendix A.

Mineral analyses of samples collected during the years 1955 and 1956 are presented in Appendix B. Water in the monitored areas is generally of a calcium carbonate type suitable for present beneficial uses. No significant changes are evidenced during the period of record. However, eight of the sixteen wells sampled contained water with per cent sodium in excess of 75. Water from well No. 1N/6E-10P1 had a concentration of 1410 ppm in total dissolved solids and a chloride concentration of 765 ppm in September, 1955,

the maximum values for these constituents in the Stockton area. Concentrations of 828 ppm total dissolved solids and 376 ppm chlorides were found in waters from well 1N/6E-10P2. The fourteen remaining monitored wells had chloride concentrations less than 200 ppm and total dissolved solids generally did not exceed 350 ppm.

Fresno County, West Side Area. The portion of San Joaquin Valley lying west of the San Joaquin River and between the Fresno-Merced county line and Tulare Lake is designated the West Side Area. The area is approximately 72 miles long, averages 18 miles in width, and comprises about 1,300 square miles or 830,000 acres. The majority of the area lies in Fresno County with about 90 square miles in Kings County.

The West Side Area is underlain by fresh water-bearing alluvial deposits with depths varying from less than 1000 feet to over 3000 feet. The water bearing deposits occur in two principal zones separated by an impervious clay layer. Ground water in the lower water bearing zone is confined while that in the upper zone is unconfined or semiconfined. The lower water-bearing zone supplies 80 per cent or more of the ground water used for irrigation in the area. A body of very poor quality water exists below the fresh water zone.

A monitoring program was established in the area to detect any significant degradation of usable ground water from underlying poor quality waters. Nearly all of the wells included in the monitoring program are gravel packed to full depth and yield water from both the upper and lower aquifer and to some extent from the basal portion of the lower zone. Data on wells included in the monitoring program are presented in Appendix A.

Mineral analyses of water samples collected in the West Side Area during 1955 and 1956 are presented in Appendix B. Quality of water in the

West Side Area varies in accordance with its source in one of the two major water-bearing zones. The upper zone, from about 200 to 300 feet below land surface, yields a calcium magnesium sulfate water with a total dissolved solids content of about 3,000 ppm and a sodium percentage of about 35. The lower zone yields a sodium sulfate water with a total dissolved solids content of about 800 ppm. The basal portion of the lower zone yields a very poor sodium chloride water with a total dissolved solids content of more than 8,000 ppm and a chloride concentration of at least 3,700 ppm. Boron in concentrations that range from 1.5 parts per million to 3.5 parts per million was found in water from more than 50 per cent of the wells sampled.

Determination of significant changes in mineral characteristics of waters from either zone poses a complex problem due to the mixing of waters in the sampled wells. The resultant mixture is generally sodium sulfate in character. Comparison of partial mineral analyses of samples collected during 1955 and 1956 reveals no significant increase in sodium or chloride concentrations. In fact, samples from many of the wells contained less sodium and chloride than did previous samples from the same wells.

Raisin City Oil Field Area. The Raisin City Oil Field Area comprises an area of about 5,600 acres, approximately 19 miles southwest of the City of Fresno.

Ground water occurs principally at depths ranging from approximately 30 feet in the eastern portion of the field to 50 feet in the western portion. Data available from electric logs indicate that the depth to the base of fresh water is about 1,000 feet in this area.

During this reporting period, approximately two-thirds of the waste water from oil field operations was disposed of into unlined sumps, from which it was dispersed by evaporation and/or percolation. The remaining third was diverted to disposal wells through

which waste waters were injected under pressure into deep strata underlying the fresh water-bearing zone. Investigation has shown that water from wells adjacent to the aforementioned sumps contain chloride concentrations considerably in excess of the general level found in water from surrounding wells.

In view of the possibility of ground water impairment from chlorides, a ground water quality monitoring program consisting of 15 wells was initiated in Raisin City Oil Field during 1953. Data on the monitored wells in the Raisin City Oil Field Area are presented in Appendix A.

Mineral analyses of samples collected during 1955 and 1956 from the monitored wells are presented in Appendix B. Comparison of these analyses with those previously published, indicates significant changes in sodium and chloride concentration in water from two wells. The most notable among these increases is shown by the analyses of water from well No. 15S/17E-14G1 where chloride concentration increased from 86 ppm in February, 1953, to 1800 ppm in October, 1955. Chloride concentration in samples from well No. 15S/17E-13G1 increased from 79 ppm in July, 1954, to 2420 ppm in September, 1955, but decreased to 1376 ppm in September, 1956. The cause of the fluctuation in these constituents has not been determined. Sodium concentrations in the area range from 32 to 602 ppm. Eleven of the wells sampled, however, had sodium concentrations less than 100 ppm.

Devils Den Oil Field Area. Devils Den Oil Field Area lies in the northwest portion of Kern County, about 50 miles northwest of Taft and 35 miles southeast of Coalinga, and on the extreme eastern flank of the Coast Range Mountains. The field is surrounded by alluvium composing the San Joaquin ground water basin. In relation to ground water occurrence, the formations in the area are the consolidated sediments, of minor importance

as a source of fresh ground water, and the unconsolidated alluvium, the principal source of fresh ground water.

Lands in and adjacent to the oil field are presently used for non-irrigated pasture. Dagany Gap and a portion of McClure Valley which lies north and west of the oil field are irrigated from wells in McClure Valley. Domestic water for the use of oil operators in Devils Den Oil Field is trucked in from Avenal and other distant points.

Oil field waste waters are disposed of in evaporation or percolation basins located in natural depressions on hillsides and in gullies prepared for that purpose by construction of earth dikes and impounding dams. Seepage and/or overflow of the waste waters during periods of heavy runoff poses a potential threat to quality of ground water in the area surrounding the oil field waste disposal sites. To detect possible damage to ground water quality, a network of wells within the oil field area and McClure Valley was selected for monitoring. Data on these wells are presented in Appendix A.

Available data concerning the nature of ground waters in McClure Valley indicate that they are of inferior quality. Total dissolved solids range in concentration from about 1,000 to 1,500 ppm and boron varies from approximately 1.5 to 10 ppm. These waters are predominantly magnesium and sodium sulfate in type. Sulfate concentrations range from about 675 to 2,200 ppm.

Analyses of samples collected from monitored wells during 1955 and 1956 are presented in Appendix B. Comparison of analyses with those previously reported reveals no significant increase in mineral concentrations. However, the chloride content of water from well No. 25S/18E-3N2 decreased from 1,200 ppm in August, 1953 to 503 ppm in June, 1956.

Edison Oil Field Area. Edison Oil Field Area, comprising about 17,000 acres, is located in the center of Kern County southeast of the City of Bakersfield. The field occupies an alluvial fan which has a southwesterly gradient about 30 feet to the mile.

The area is underlain by a fairly thick section of water-bearing sediments which slope gently westward from the Sierra Nevada and Tehachapi Mountains toward the trough of San Joaquin Valley. These sediments constitute the principal zone of fresh ground water storage beneath Edison Oil Field and are the only source of supply for the area.

The disposal of oil field waste waters is generally accomplished by discharge into unlined sumps or percolation ponds. Studies have shown that at this time only very limited pollution of ground water can be attributed to the present method of waste disposal. That ground water quality has not been affected to a greater or more recognizable degree might be attributed to one or more of the following conditions: large quantities of waste water have been discharged for relatively few years; waste water sumps are scattered over a large area so that the effects are dispersed; soils in the area may have a boron fixing capacity; or pollution is confined to only the upper portion of the ground water body and therefore is not detected in water samples from deep irrigation wells. Because of the potential threat of pollution from this source, a monitoring grid of 13 wells has been established in this area to provide a continuing check on quality. Data on the monitored wells are presented in Appendix A.

Analyses of samples collected during 1955 and 1956 are presented in Appendix B. Comparison of these analyses shows little significant change in quality characteristics of well waters during the period. Maximum concentrations of sodium and chloride were 80 ppm and 165 ppm, respectively, from wells sampled in 1955 and 1956.

Lahontan Region (No. 6)

The Lahontan Region, part of the Great Basin, extends about 575 miles along the eastern border of California, attaining a maximum width of

about 170 miles through the Mojave Desert. Topography of the region varies greatly, with the rugged snowcapped Sierra Nevada on the west, and arid desert basins on the east and south. This region has a unique structural topography, consisting of a series of mountains and intermontane basins. These basins are normally centrally drained but may spill over, one into the other, and develop a longitudinal drainage system traversing a group of basins. The majority of the flat low-lying lands are located in the arid portions of the region.

Large military installations in the southerly desert portion, together with aviation and supporting industries, have given impetus to rapid population growth, particularly in the Antelope and Mojave River Valleys. Mining and agriculture are major contributors to the economy of the area although agriculture is limited by the scarcity of water.

Fifty-eight ground water basins have been identified in the Lahontan Region. The Lower Mojave River Valley from Barstow to Yermo is the only area so far included in the monitoring program.

Lower Mojave River Valley, Barstow to Yermo

The area included in the monitoring program extends from the city of Barstow easterly through Yermo, in the central portion of San Bernardino County.

Recent alluvial deposits of the Mojave River underlie most of the area and comprise the principal aquifer. The only source of water in the Lower Mojave River Valley is from ground water, replenished primarily by surface and subsurface flow in Mojave River.

Barstow, the only large city within this area and an important railroad center, nearby military bases, irrigated agriculture, and mining developments are the principal users of ground water in Lower Mojave River Valley.

An investigation of ground water conditions in this area was made by the State Division of Water Resources in 1951-52, at the request of the Lahontan Regional Water Pollution Control Board. Although no evidence of pollution of ground water was found during the investigation, it was recommended in the report that a monitoring program be established and maintained in the vicinity.

Eight monitor wells are located adjacent to the Mojave River in an area extending between Barstow and Yermo. Data on these wells are presented in Appendix A.

Mineral analyses of water obtained from the monitored wells are presented in Appendix B. The waters are predominately sodium calcium bicarbonate and sodium bicarbonate. Total dissolved solids range from 228 to 884 ppm. Chlorides in the well waters range from 20 to 106 ppm with the higher chloride values, in general, located east of Barstow and upstream of the Marine facility at Nebo. The lowest chloride values are found in well 9N/2E-8F1, which is located south of Yermo, and is the most easterly of the monitoring wells. Chlorides were noted to be increasing in all wells except wells 9N/1W-5J1 and 9N/2W-1F1.

Ground waters containing the higher concentrations of boron are located immediately below Barstow at wells 9N/1W-5J1 and 9N/1W-9G1. These well waters have boron concentrations of 3.2 and 1.2 ppm, respectively, rendering the water unsuitable for irrigation of plants sensitive to this element. Per cent sodium in the waters from the monitored wells ranges between 34 and 53, with the exception that water from well 9N/1W-5J1 contained 85 per cent sodium. Ground water from the monitoring wells is generally of good quality for domestic purposes, although some of the wells have very hard water.

Colorado River Basin Region (No. 7)

Colorado River Basin Region comprises all basins south of the Lahontan Region, east of the Santa Ana and San Diego Regions, west of the Arizona border, and north of the California-Mexico boundary. The region has an average width of more than 125 miles, averages about 150 miles in length and includes an area of approximately 20,000 square miles.

Topography of the Colorado River Basin is characterized by large desert valleys with interior drainage, separated from each other by numerous dispersed mountain ranges. A dry lake bed usually occupies the point of lowest elevation in the valleys of interior drainage.

A valley or trough, having a length of about 100 miles and a width ranging from 10 to 40 miles, extends northwesterly from the International Boundary. Salton Sea occupies the central portion of this trough, with the Coachella Valley to the northwest and Imperial Valley to the south. Flow in the New, Alamo, and Whitewater Rivers, which empty into Salton Sea, consists mainly of return water from irrigated lands in Imperial and Coachella Valleys.

Agriculture is a major contributor to the economy in this region. Mining, tourism, and military bases are also important to the economy. The more important agricultural developments are in the Imperial, Coachella, Palo Verde, Borrego, and Yuma Valleys, which are noted for production of a wide variety of irrigated fruit, truck, and field crops. Irrigation water for Imperial, Palo Verde, and Yuma Valleys and the lower portion of Coachella Valley is obtained from the Colorado River. In Borrego Valley and the upper portion of Coachella Valley, irrigation water is obtained entirely from local ground water resources. The principal mining activities in the area are also dependent upon ground water.

Forty-six ground water basins have been identified in the Colorado

River Basin Region. The southern portion of the Coachella Valley is presently the only area included in the monitoring program.

Coachella Valley

This valley includes an area of approximately 680 square miles in Riverside County. Since 1947, Colorado River water has been imported through the Coachella Canal to supplement local waters in meeting the increasing water requirement of the valley. This water is used in lower Coachella Valley from the vicinity of Indio to the Salton Sea. The area included in the monitoring program extends southwesterly from two and one-half miles northwest of Indio to within three and one-half miles of the Salton Sea, and is generally the same as that which receives Colorado River water.

The principal water producing zone underlying lower Coachella Valley consists of unconsolidated sand, gravel, and silt capped by Lake Cahuilla sediments. This is a very productive zone and is used extensively. Many of the wells tapping water from this zone were artesian in the early 1920's. These wells, however, are no longer flowing because heavy withdrawal of ground water has lowered the piezometric surface. This zone is replenished by ground water moving southeastward from the upper portion of the basin. Above the principal zone is a shallow zone of perched water, accumulated from irrigation return flow, waste water, and rainfall.

This area is being monitored to detect the occurrence of any pollution or degradation in the deeper ground waters of this basin due to interconnections of the water-bearing zones, and to indicate any changes produced by imported water.

Water in the shallow zone is generally of poorer quality than water in the principal zone and may be subject to direct pollution from waste discharges or impairment from return irrigation water. Degraded waters of

the shallow zone could move through abandoned or improperly constructed wells to the deeper zone. High ground water conditions caused by heavy applications of irrigation water have necessitated the use of tile drains in portions of this area.

Data on wells included in the monitoring network are presented in Appendix A. All monitored wells except one are perforated between the depths of 108 and 700 feet and obtain water from the principal water producing zone. Well No. 6S/8E-10A2 is perforated between 60 and 80 feet and produces from the shallow zone.

Mineral analyses of water from the monitored wells are presented in Appendix B. Five of the twelve monitored wells in the area yield water of calcium bicarbonate type. Waters of the other wells are sodium bicarbonate, sodium sulfate and sodium chloride in character. Coachella Valley ground waters range between soft and very hard. Sodium percentages in the water range between 20 and 96, with the higher percentages being found in the lower end of the basin. Below Thermal, the per cent sodium in well 6S/8E-27H1 ranged between 60 and 70 and further down the valley from this well the per cent sodium ranged between 75 and 96. The latter sodium percentages are unsatisfactory for irrigation use on most California soils.

In general, an increase has been noted in chloride over the last three years, with concentrations ranging between 16 and 858 ppm. The highest chloride concentration was found in water from well 6S/7E-25E1. Total dissolved solids in all the monitoring wells ranged between 147 and 855 ppm except for well 6S/7E-25E1, which had concentrations of 1,046 and 2,340 ppm in 1955 and 1956 respectively. Total dissolved solids increased in all the wells during the last three years. Fluoride concentration in the well waters varied between 0.2 and 4.2 ppm, with the exception of water from well 7S/9E-16K1 in the vicinity of Mecca, where the fluoride concentration varied between 6.0 and 12.0 ppm.

Santa Ana Region (No. 8)

Santa Ana Region comprises the entire drainage area of the Santa Ana River and all basins draining into the Pacific Ocean between the Los Angeles-Orange County line on the north and west and the drainage divide between Muddy and Moro Canyons on the south. This region extends approximately 25 miles along the coast and extends inland a maximum distance of about 90 miles. The region includes an area of approximately 2,850 square miles. Orange County Coastal Plain in the Santa Ana Region extends along the ocean about 15 miles from the Los Angeles-Orange County line to the vicinity of Costa Mesa, and extends inland an average of about 20 miles. The Upper Santa Ana Valley lies further inland, pocketed between the mountains and foothills.

Nine ground water basins and 27 sub-basins have been identified in the Santa Ana Region but only Chino and Bunker Hill Basins, and the East Coastal Plain Pressure Area are included in the ground water monitoring program.

East Coastal Plain Pressure Area

East Coastal Plain Pressure Area constitutes the extreme coastal portion of the Orange County Coastal Plain Basin and extends about 10 miles inland from the coast.

Topography of coastal Orange County is characterized by a series of gaps and mesas. A prominent geologic feature of the area is the Newport-Inglewood structural zone which essentially parallels the coast, approximately one-half mile inland. This fault zone acts as a partial barrier to movement of ground water in older deposits but exerts little or no effect upon deposits of Recent age. Inland of the fault zone, waters are extensively used for domestic, municipal, agricultural, and industrial purposes.

Agriculture is a major economic activity in Orange County with truck crops, citrus, and beans comprising the principal crops. Coastal Orange

County has experienced rapid urbanization, and is considered to be within the Metropolitan Los Angeles area. Subdivisions and industrial developments are rapidly encroaching upon agricultural areas. Oil production is an important industry in the East Coastal Plain Pressure Area. Newport, West Newport, and Huntington Beach oil fields, as well as a portion of the Seal Beach oil field, are located in this sub-basin.

In the development of these oil fields during the first two decades of this century, a considerable quantity of oil field brine was disposed of near the point of origin, mainly by percolation and evaporation. These early practices have, for the most part, been discontinued. However, some wastes are still disposed of in this manner. In general, in the East Coastal Plain Pressure Area, domestic and industrial wastes are collected and disposed of by discharge into the ocean through submarine outfalls.

Imported Colorado River water supplements the ground water supply in this area. In coastal Orange County extensive pumping of ground water aquifers has lowered the piezometric surface of ground water to below sea level and the resultant landward gradient has induced sea-water intrusion along the coast.

A ground water quality monitoring program has been instituted in this area to determine the extent and degree of deterioration of ground water quality in the coastal area. Data on monitored wells are presented in Appendix A.

Mineral analyses of samples taken during 1955 and 1956 are presented in Appendix B. Quality of water in Coastal Orange County is extremely variable in nature. Waters in the Santa Ana gap are calcium chloride in character, with the exception of water from well 6S/11W-12Q1 located about a mile inland from the ocean, which is sodium chloride water. Sodium and

bicarbonate were the predominant ions in the waters of Huntington Beach and Bolsa Chica Mesas. Total dissolved solids content in the ground waters sampled ranged between 238 and 4,828 ppm. The higher values are located in the gaps nearest the shore, indicating impairment due to sea-water intrusion or waste disposal in the coastal area.

Generally, increases in total dissolved solids were noted in water from wells in the Santa Ana gap, with the exception of wells 6S/10W-7L1 and 6S/11W-12Q1, located 9,000 and 6,000 feet, respectively, from the shore line. Range of chloride concentration in the sampled waters was from 12 ppm to 2,638 ppm. In general the higher chloride concentrations were noted in the gaps near the ocean and lower concentrations were found in the mesas and the inland areas. Increases in chlorides were noticed in most of the well waters in Santa Ana gap and the mesas.

The highest value of nitrate found during this sampling period was 29 ppm at well 6S/11W-3R2, located on Huntington Beach mesa. The remainder of the monitoring wells contained water with nitrate concentrations ranging from 0.0 ppm to 20 ppm. The per cent sodium in well waters was generally less than 61, except at wells 5S/12W-12C1, 5S/11W-29C1, and 6S/11W-3R2, where the highest value was 89.5 per cent. These three wells are located on Huntington Beach mesa, Bolsa Chica mesa, and Landing Hill, respectively, with wells in the intervening gaps having lower values of per cent sodium. Per cent sodium in the first two wells above has been increasing, while the per cent sodium in well 6S/11W-3R2 has been decreasing after reaching 91 per cent during December, 1954. The highest boron concentration noted was 1.40 ppm at well 5S/11W-26M1 located on the north flank of Huntington Beach mesa.

The waters are generally unsuitable for irrigation or domestic use in the gaps within two miles of the coast because of the high chlorides. Near

the coast on the mesas, the ground waters are unsuitable for irrigation use because of the high percentage sodium, although the chlorides are within the recommended limits.

Chino Basin

Chino Basin is a large alluvial filled basin of the upper Santa Ana Valley about 20 miles long and 15 miles wide. The basin is intermontane, bounded on the north by the high, rugged San Gabriel Mountains and on the south by the Chino Hills and Santa Ana Mountains. The alluvium of the basin comprises outwash deposits by streams emanating from the surrounding hills and mountains.

Colorado River water is used as a supplementary source of water in this basin. Agriculture comprises the major use with the predominant crops being citrus and grapes, although urban and industrial requirements have increased significantly in recent years.

Industrial and domestic waste disposal in Chino Basin is principally by discharge to surface streams or percolation ponds. Only one industrial waste discharge is connected to a sewer with an ocean outfall. A monitoring well network was established in the southern portion of this basin to ascertain the cumulative effect of a number of industrial waste and domestic sewage discharges. Data on the monitored wells are presented in Appendix A.

Appendix B presents mineral analyses of waters sampled from the monitor wells during 1955 and 1956. Ground water is calcium bicarbonate in nature with total dissolved solids ranging from 195 to 675 ppm; the lower values being in waters from the most northeasterly wells. The highest value of total dissolved solids is found in the water from well 2S/7W-27A1. Comparison of these analyses with those of the two previous years shows a general increase in the total dissolved solids. The values of per cent sodium

ranged between 13 and 22. A general increase in chloride concentration was noted in all the well waters. The highest concentration, 71 ppm, was found in water from well 2S/7W-23E1. Values of nitrate concentrations were found to average 62 ppm in water from well 2S/7W-21L1 and 52 ppm in water from well 2S/7W-27A1. These wells are located downslope from the other monitoring wells.

The total hardness of the ground water in this basin varied between 150 and 605 ppm, with the harder waters being found in the lower portion of the basin.

In general, the quality of ground water is suitable for irrigation and domestic uses.

Bunker Hill Basin

Bunker Hill Basin is located in the upper Santa Ana River drainage area south of, and adjoining, the lower slopes of the San Bernardino Mountains, with the major portion of the basin lying east of the city of San Bernardino. The basin extends approximately 20 miles along the base of the mountains, is about eight miles wide at its maximum width and occupies an area of approximately 92 square miles.

Topography of this basin reflects the deposition and erosion by Cajon Creek, Santa Ana River, Mill Creek, and several small streams. Each of the named streams has a well-defined alluvial cone and these cones coalesce in the central portion of the basin, forming a smooth plain which slopes to the southwest.

Residential, industrial, and agricultural developments cover much of Bunker Hill Basin. The major portion of the industrial developments are situated in or adjacent to the City of San Bernardino. Ground water is pumped heavily in this basin to meet these requirements.

The practice of disposal of sewage and industrial wastes in this area has been by discharge to surface streams or percolation ponds. A zeolite company near the northwest limits of the City of San Bernardino, manufactures synthetic sodium zeolite which produces a waste with a high pH and a high sodium concentration. Investigation of this waste disposal practice found that effects of the waste appeared only in the ground water near the plant, but available hydrologic and geologic data indicate that downstream wells may be impaired in time. Numerous wastes are discharged to the Santa Ana River in the central portion of this basin. Several wells have been sampled in this area to detect changes in water quality resulting from these waste discharges. Monitoring wells 1N/4W-29F1 and 1N/4W-29L1 are located about one-half mile southeasterly (along the hydraulic gradient) of the company's sumps. Data on wells included in the monitoring program are presented in Appendix A.

Mineral analyses of water from the monitored wells are presented in Appendix B. Ground water in this basin is calcium bicarbonate in character. Total dissolved solids in the well waters ranged between 152 and 438 ppm, and per cent sodium ranged between 9.2 and 33.6, with the highest sodium percentage being found in water from well 1S/4W-13F2. Decrease in per cent sodium from previous years was noted at wells 1N/4W-29F1 and 1N/4W-29L1. Maximum boron concentration noted was 1.29 ppm at well 1S/4W-13F3 while concentrations of boron in the other well waters did not exceed 0.88 ppm. Variation in chloride concentration was from 4 to 27 ppm. Increase in chloride concentrations of a few parts per million was noted in all well waters sampled. Maximum fluoride concentration was 0.8 ppm in water from well 1S/4W-13F3, which also had the highest boron concentration and sodium percentage.

In general, the waters are of good quality for irrigation and domestic use; however, the waters are hard to very hard, thereby decreasing their desirability for domestic use.

San Diego Region (No. 9)

San Diego Region comprises all basins draining into the Pacific Ocean south of the divide between Muddy and Moro Canyons in Orange County and north of the California-Mexico boundary. The region averages about 50 miles in width, about 80 miles in length and occupies an area of approximately 3,830 square miles.

The economy of the region is dependent upon irrigated and non-irrigated agriculture, extensive military installations, commercial fishing and shipping, and tourism to some extent.

More than 20 ground water basins have been identified in the San Diego Region. Most of these basins are relatively small, although many are extensively developed. El Cajon Valley Basin and coastal portions of San Luis Rey and Tia Juana Basins are at present included in the monitoring program.

San Luis Rey Valley

San Luis Rey Valley is a long, narrow river valley in northern San Diego County. Although it extends approximately 30 miles inland from the Pacific Ocean, only the lower portion of this valley, which is adjacent to the ocean, has been included in the monitoring program. This portion of the valley is about six miles long and varies from two miles to less than one-quarter mile in width.

The coastal portion of the valley floor is formed by Recent alluvial deposits of San Luis Rey River underlain and bordered by older sedimentary deposits. The unconsolidated Recent alluvium constitutes the source of ground water.

The valley floor in this area is extensively utilized for production of irrigated truck and field crops.

Deterioration of ground water quality due to saline water intrusion has been evident for many years in wells along the coastal portion of this area. A monitoring program was established to provide valuable information regarding the extent and magnitude of the saline water encroachment. Data on the monitored wells are presented in Appendix A.

Mineral analyses of water obtained from the monitored wells are presented in Appendix B. There is no uniformity in the character of the waters throughout the monitoring area although calcium, sodium, chloride, and bicarbonate are the predominant ions in the majority of the waters. Water from well 11S/4W-4N1, which is the well furthest upstream in the monitoring program, had an average of 650 ppm total dissolved solids during the monitoring period. Total dissolved solids in well 11S/5W-23E1 increased from 11,800 to 19,520 ppm during the years 1955 and 1956. Data indicate that total dissolved solids are steadily increasing in water from this well, which is about one-half mile from the ocean. Chlorides in the water from this well increased steadily from 3,600 ppm in early 1953 to 9,500 ppm in late 1956. The chlorides in water from the monitoring well furthest upstream on the river, 11S/4W-4N1, varied between 129 and 136 ppm over the past two years and had a low concentration of 125 ppm three years ago. In general, the chloride concentration in all well waters sampled downstream from this well exceeded 250 ppm, except in wells 11S/4W-18L4 and 11S/5W-13L1 where the chloride concentration ranged between 212 and 288 ppm. Sodium concentration in all the well waters sampled was less than 46 per cent during the last two years, with the exception of the water from well 11S/5W-23E1 where it varied between 68 and 73 per cent. The highest boron content, 1.20 ppm, was also found in water from this well. Concentration of boron in water from other monitoring wells did not exceed 0.35 ppm. Concentration of fluoride in the well waters did not exceed 0.8 ppm.

Although the monitored waters are generally of poor quality, they are used extensively in this basin for both irrigation and domestic uses.

El Cajon Valley

El Cajon Valley is located in San Diego County approximately 15 miles east of San Diego. It is a small, roughly circular valley surrounded by a rim of low hills. The valley is approximately five miles across, having an area of about 14,000 acres. The main drainage channel from the valley is Forester Creek, tributary to the San Diego River.

The valley is underlain at depth by crystalline rocks and sediments which are covered with a thin coating of alluvium. All formations in the valley contain some water, but none yield large amounts to wells.

Although Colorado River water is being used in increasing quantities, much of the valley still relies on ground water. Most of the ground water is obtained from fractured and weathered zones in the crystalline rock. Very little water is obtained from the sediments due to their low permeability.

Although portions of the valley are used agriculturally, it is highly developed as a residential area. Two communities, El Cajon and Bostonia, are located in this valley.

This area has been included in the monitoring program to detect changes in the water quality due to the use and re-use of ground water and the use of imported Colorado River water in this valley. Data on the wells included in the monitoring program are presented in Appendix A.

Mineral analyses of water obtained from the monitored wells are presented in Appendix B. Fifteen wells are included in the monitoring program in El Cajon Valley, about 50 per cent contain waters of sodium calcium chloride character, the other wells contain sodium chloride character waters. Total dissolved solids ranged from 720 to 4,395 ppm.

Wells 16S/1W-11P4, 16S/1W-3K3, and 16S/1W-15K3 located on the southwest side of the valley contain waters with electrical conductivities in excess of 3,000. The value of electrical conductivity did not exceed 2,600 in the other monitored wells. Maximum boron concentration in water from monitored wells was 0.53 ppm. Concentration of nitrates in many of the well waters exceeded the limit of 44 ppm. Per cent sodium in the well waters did not exceed 58, with the exception of wells 16S/1W-10E2 and 16S/1W-15K3 where the percentages were 72 and 70, respectively.

Chloride concentrations in all the well waters, except those from wells 15S/1E-31R1 and 16S/1W-1H4, exceeded 250 ppm. The two latter wells are located in the northeastern portion of the valley and contained water with chloride concentrations of 183 and 199 ppm, respectively. Records indicate that the chloride concentration in both of these wells has been increasing steadily. In the water from well 15S/1E-31R1, chloride concentration increased from 108 ppm in 1951 to 183 ppm in 1956. An adjacent well, 16S/1W-1H4, also showed an increase in chlorides during these years. A rise was noted in the chloride, nitrate, and total dissolved solids concentration in most of the wells in this valley.

Although the ground waters of this basin are extensively used, they are generally poor in quality.

Tia Juana Valley Basin

The Tia Juana Basin, situated approximately 15 miles south of the City of San Diego, is the most southerly ground water basin in the San Diego Region. It extends along the Tia Juana River into Mexico and is bounded by hills to the north, east, and south, and the Pacific Ocean to the west. The Tia Juana Basin, as referred to herein, includes only that portion of the Tia Juana River Valley in the United States. This basin has an area of approximately 4,300 acres of relatively flat valley fill.

The basin is composed of alluvium deposited by the Tia Juana River. Throughout most of the area included in the monitoring program, hydrologic observations indicate the presence of a deep water-bearing zone overlain by a shallow zone. Both zones occur in the alluvium, but the upper zone sediments, because of lower permeability, give the lower zone the characteristics of a pressure aquifer. In the eastern portion of the monitored area, only one water-bearing zone exists in the permeable alluvium.

Although not heavily populated the region is extensively developed to agriculture. Irrigated truck, alfalfa, and other field crops are widely grown.

Prior investigations have shown that during periods of above average rainfall the ground water in the basin is recharged, and during drought periods withdrawn in such amounts that the ground water levels are depressed below sea level, especially in the lower portions of the basin. This latter condition creates a landward gradient conducive to sea-water intrusion. During the period since 1947, water quality impairment has been noted in several wells in the coastal area. Tia Juana Basin has therefore been included in the monitoring program in order to determine the extent and rate of ground water deterioration. Data on wells included in the monitoring program are presented in Appendix A.

Mineral analyses of water obtained from monitored wells are presented in Appendix B. Waters in the basin are sodium chloride in character with chloride concentration being above 250 ppm in all the monitoring wells. Irrigation waters with chloride content as high as 680 ppm are used successfully in Tia Juana Valley. Wells near the river mouth produced waters with chloride concentrations ranging between 450 and 4,470 ppm. Waters from the monitoring well farthest up the valley, well 19S/2W-1E4 one-half mile south

of San Ysidro and about 5 miles inland, had chloride concentrations varying from 557 to 772 ppm during the years 1955 and 1956. During the previous reporting period (1953-1954), the highest chloride concentration was 613 ppm. Ten years previously in February, 1943, the chloride concentration in this well was 330 ppm.

Water from well 18S/2W-32P4, located a mile inland from the mouth of the river, had chloride concentrations ranging from 3,580 to 4,470 ppm during 1955 and 1956. Total dissolved solids in the ground water through the basin ranged from a high of 8,824 ppm near the river mouth down to 1,603 ppm near San Ysidro.

Although the ground waters of this basin are generally of poor quality and would not be recommended for irrigation or domestic use, they are extensively and successfully used.

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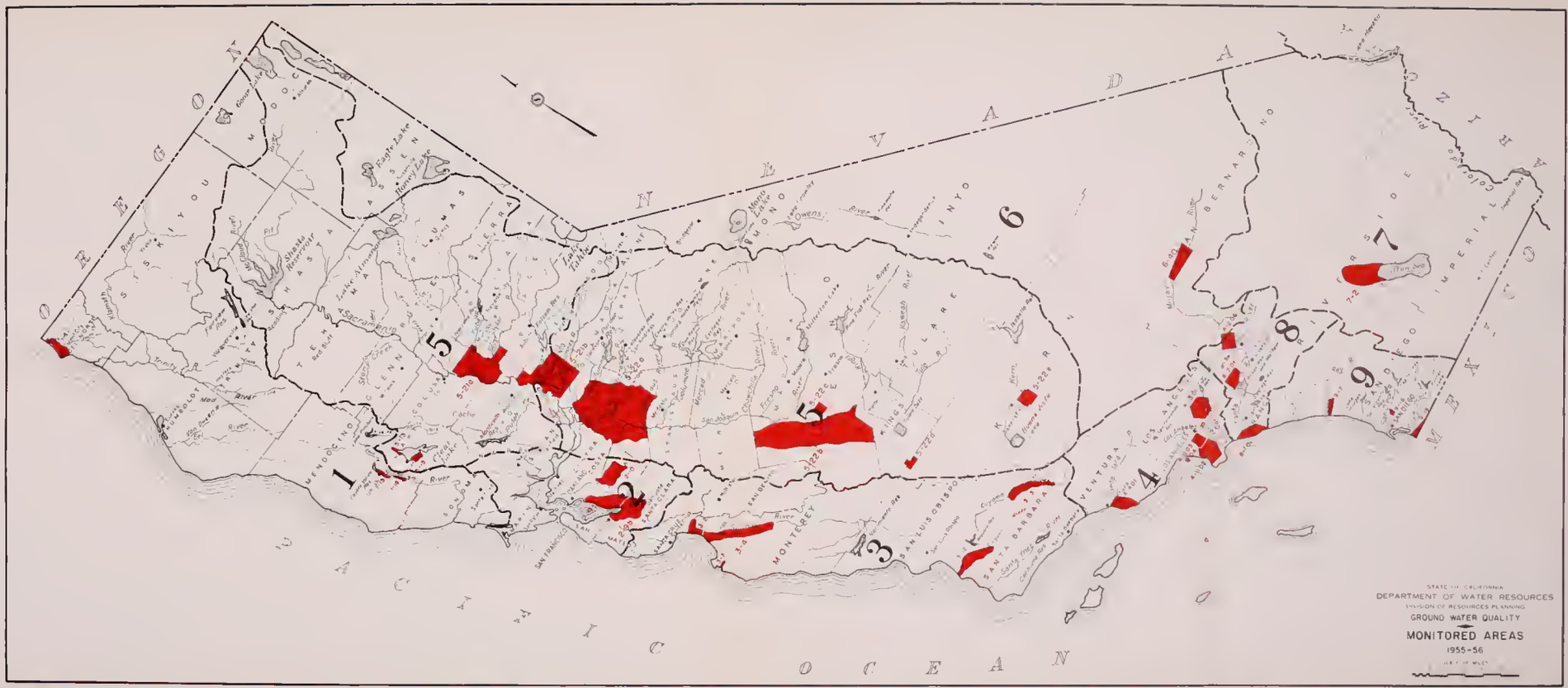

APPENDIX A

WELL DATA

APPENDIX A

WELL DATA

WELL DATA

SMITH RIVER PLAIN, CRESCENT CITY AREA

WELL DATA

SMITH RIVER PLAIN, CRESCENT CITY AREA

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
HB&M											
16N/1W-2Q1	0.15 mile east of Highway 101 on Elk Valley Road.	Arlet Short	----	Dom	----	6	30	----	---	Yes	Yes
16N/1W-15C1	1.2 mile south of junction of Highways 101 and 199 on west side of 101.	L. L. Early	----	Dom	---	6	30	----	---	Yes	Yes
16N/1W-17A2	1.2 mile north of Crescent City on North Creet Drive.	Pine Grove School	----	Dom	36	48[c]	15	----	---	Yes	Yes
16N/1W-18F1	0.6 mile north of "X" Washington Avenue and "R" Street, east of "R" Street.	Pioneer Lumber Co.	----	Dom	54	8	35	----	No	Yes	Yes
16N/1W-20A2	225 feet north of Coolidge Avenue, 40 feet west of Burchell Street.	Albert Pullen	----	Dom	---	---	25	----	No	Yes	Yes
16N/1W-20B1	At foot of Hoover Street, Crescent City.	J. E. Patterson	1952	Dom	---	8	41	----	No	Yes	Yes
16N/1W-20H1	225 feet south of Coolidge Avenue, 75 feet east of Harold Avenue.	Walter Storey	1946	Dom	40	6	31	----	No	Yes	Yes
16N/1W-20Q1	75 feet north of Macken Avenue, 75 feet east of Amador Avenue.	Crescent City Water Co	---	Mun	---	20	31	----	No	Yes	Yes
16N/1W-21M1	500 feet east of intersection of Highways 101 and 199.	Del Norte County Infirmary	---	Dom	19	4	30	----	No	Yes	Yes
17N/1W-2G1	2.75 mile south of Smith River and 400 feet east of old Highway 101.	Evo Mello	---	Irr	---	12	50	----	No	Yes	Yes
17N/1W-9B1	2.0 mile northeast of Fort Dick on Lowerlake Road.	R. H. Emmerson	1956	Irr	---	12	25	----	No	Yes	Yes
17N/1W-15E1	1.5 miles west of Fort Dick	Paul E. Johnson	---	Irr	---	12	43	----	No	Yes	Yes
18N/1W-5G1	650 feet east of Highway 101 and 700 feet south of Gilbert Creek.	Ray W. Stroebing	1952	Dom	---	6	60	----	No	Yes	Yes
18N/1W-17R1	Between Shipasnore and Highway 101 at mouth of Smith River.	M. J. Sierka	1955	Dom	---	8	54	----	No	Yes	Yes
18N/1W-26D1	0.25 mile south of Highway 101 on Westbrook Lane.	Arnold Samuelson	---	Irr	---	12	57	----	No	Yes	Yes
18N/1W-35B1	0.75 mile south of Smith River; 2,200 feet west of Highway 101.	L. L. Borough	1956	Irr	---	12	[illegible]	30-50	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

c Dug well

WELL DATA

UKIAH VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
14N/12W-5K1	0.8 mile north of Highway 101 and 400 feet south of Ukiah-Boonville Road.	Gilley	—	Dom	—	6	94	—	No	Yes	Yes
14N/12W-11N1	4 miles south of Talmadge on River Road.	Louis Johnson	—	Dom	—	—	30	—	No	Yes	Yes
14N/12W-26K1	7.5 miles south of Ukiah; 0.2 mile west of Highway 101.	Marcus Methonen	—	Dom	—	8	—	—	No	Yes	Yes
15N/12W-8D1	1 mile north of Ukiah on Highway 101 and 0.15 mile west of Crrs Spring Road.	Mayfield	—	Dom	—	6	165	—	No	Yes	Yes
15N/12W-35D1	50 feet west of River Road and 0.8 mile south of Talmadge Post Office.	D. Broggi Ranch	—	Dom Irr	—	12	60	—	--	Yes	Yes
16N/12W-5D1	3 miles north of Calpella on west side of Russian River.	Frank Brown	1948	Dom	—	64	25	—	--	Yes	Yes
16N/12W-9Q1	0.15 mile north of intersection of East Road and Calpella Road and 750 feet east of East Road.	P. G. & E.	1951	Ind	—	8	64	36-64	Yes	Yes	Yes
16N/12W-22H1	4 miles northeast of junction of Highway 101 and 20.	Ralph Aquilar	1948	Dom	--	—	48	—	—	Yes	Yes
16N/13W-1J1	3 miles northwest of Calpella on Highway 101.	Norman Reece	1900	Dom	—	48	35	—	—	No	Yes
17N/12W-18A1	7 miles north of Calpella on Redwood Valley Road.	J. Nelson	1953	Dom	—	8	57	--	--	Yes	Yes
17N/12W-28M1	4 miles north of Calpella on Redwood Valley Road.	Harry Mathews	1920	Dom	--	48	32	—	—	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
UKIAH VALLEY

WELL DATA

SANEL VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MENDOCINO COUNTY											
12N/11W-2F1	At Pieta on west side of Highway 101.	A. De Marcantonio	---	Dom	---	10	72	---	---	Yes	Yes
13N/11W-7D1	3.0 miles north of Hopland; 100 feet east of Highway 101	E. F. Hawn	---	Irr	---	---	41	---	---	Yes	Yes
13N/11W-18B1	1.25 miles north of Hopland and 0.38 miles east of Highway 101	A. Damiano	---	Irr	---		35	---	---	Yes	Yes
13N/11W-18D1	1.5 miles north of Hopland; 100 feet west of Highway 101	J. H. Pomroy Co.	---	Irr	---	12	60	---	---	Yes	Yes
13N/11W-19..1	On Boonville Road; just off Highway 101 in Hopland	Hopland Public Utility District	---	Mun	---	---	---	---	---	Yes	Yes
13N/11W-30H1	1.0 mile south of Hopland on East River Road.	Grace Ranch	---	Dom Irr Stk.	---	---	---	---	---	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

EAST BAY AREA OF SANTA CLARA VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
2S/3W-28G1	0.5 mile east of Dolittle St. and 300 feet north of Jones Ave. and 50 feet south of San Leandro Creek	A. Ratto	1928	Irr	10	12	250	----------	No	No	Yes
2S/3W-34A2	300 feet south of Davis St. and two blocks east of East Shore Freeway	R. A. Zobal	----	Dom	30	----	85	----------	No	No	Yes
3S/2W-31B3	100 feet west of Clawiter St. and 0.25 mile north of Bay Bridge San Mateo Boulevard	M. Bettencourt	1927	Dom Irr	22	10	340	300 - 340	No	Yes	Yes
3S/2W-32D2	300 feet east of Southern Pacific Railroad and 200 feet north of Bay Bridge Boulevard	Mount Eden Nursery Co.	----	Dom Irr	----	8	65	----------	No	No	Yes
3S/3W-13B2	100 feet west of Nielson St. and 0.15 mile south of Grant Ave. San Lorenzo	Cianelli	----	Irr	17	----	113	48-113	No	No	Yes
3S/3W-24H1	0.15 mile north of Russell Rd. at end of Jefferson St. near Russell City	----------	----	Dom Irr	11	10	550	----------	No	No	Yes
3S/3W-24Q2	350' southeast of Russel Rd. 1400 feet west of Adams St.	J. Horat	1928	Dom Stock	8	8	80	----------	No	No	Yes
4S/1W-21M1	0.37 mile north of Fremont Ave. at north end of Shinn Road	J. C. Shinn	----	Ind	69	----	165	----------	No	Yes	Yes
4S/1W-21P1	30 feet north of Fremont Ave. and 250 feet west of Shinn Road	Alameda County Water District	1943	Mun	----	12	175	----------	No	No	Yes
4S/1W-29M1	75 feet southeast of Central Ave. and two blocks southwest of State Highway 17	Joseph Thomas	---	Irr Dom	----	----	116	----------	No	Yes	Yes
4S/1W-29Q1	100 feet southwest of State Highway 17 and 0.65 mile southeast of Central Ave.	Joseph Thomas	---	Dom	----	12	110	----------	No	No	Yes
4S/1W-30C3	100 feet northwest of Alder Ave. and 0.15 mile southwest of State Highway 17	George Silva	1947	Dom Irr	----	8	167	----------	No	Yes	Yes
4S/1W-30E2	near Centerville	Braga	----	Irr	----	12	166	----------	No	No	Yes
4S/1W-30K3	100 feet northwest of Baine Ave. and 0.40 mile southwest of State Highway 17	George Silva	----	Irr		---	265	----------	Yes	No	Yes
4S/1W-30Q3	0.4 mile northeast of Blacow Road and 200 feet northeast of Central Ave.	Joe Massola	1950	Irr	----	----	435	----------	Yes	Yes	Yes
4S/1W-30R2	0.4 mile northeast of Blacow Road and 200 feet southwest of Central Ave.	John D. Lewis	----	Dom Irr	----	----	250	----------	No	No	Yes
4S/1W-31B1	100 feet southeast of Central Ave. and 150 feet northeast of Blacow Rd. and one mile SW of Centerville	H. M. Lewis	----	Irr	----	----	----	----------	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

EAST BAY AREA OF SANTA CLARA VALLEY (cont.)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
M.D.B.&M.											
4S/1W-31F1	near Centerville	Silva	------	Irr	----	----	240	----------	No	No	Yes
4S/1W-31G2	175 feet southwest of Blacow Road and 0.2 mile southeast of Central Ave.	J. S. Calperis	------	Irr	41	----	109	----------	No	Yes	Yes
4S/1W-33E1	20 feet from lane which is 0.35 mile southeast of Mawry Ave. and 0.15 mile southwest of Highway 17	J. Pianetta	------	Irr	----	16	286	----------	No	No	Yes
4S/1W-33G3	400 feet northeast of Highway 17 and 0.8 mile southeast of Santos Ave. and 2 miles southeast of Centerville	Sodina	-------	Dom Irr	----	----	126	----------	No	No	Yes
4S/1W-33K1	300 feet northwest of P.G.&E. road and 300 feet southwest of Highway 17	Ben Tafar	------	Dom Irr	----	----	225	----------	No	No	Yes
4S/2W-9P2	between Benson and V St. and 0.25 mile west of 17th St. Alvarado	J. F. Bettencourt	1925	Irr	----	12	600	----------	No	No	Yes
4S/2W-10B1	50 feet south of Whipple Road and east of Alquire Road	J. I. Gomes	------	Dom	----	----	180	----------	No	No	Yes
4S/2W-15D1	0.5 mile southeast of intersection of Highway 17 and Marsh Road in Alvardo on Highway 17	J. A. Rose	------	Dom Irr	----	----	300	----------	No	No	Yes
5S/1W-4R1	75 feet south of Cookes Road and 0.2 mile east of Lloyd Road intersection	Chas. Cook	1922	Dom Irr	23	10	97	----------	No	No	Yes
5S/1W-8J1	300 feet northeast of Boyce Road and 0.45 mile southwest of P.G.&E. road	W. B. Brinker	------	Dom Irr	----	14	297	----------	No	No	Yes
5S/1W-16M1	southeast of Lloyd Road and 100 feet northeast of Southern Pacific Railroad		------	Dom Irr	------	----	----	----------	No	No	Yes
5S/2W-5K1	at radio stetion KGO on Dombarton bridge road	KGO Radio Station	1947	Dom	5	12	334	----------	Yes	Yes	Yes
5S/1E-30P1	0.5 mile northeast of P. I. Company line and Highway 17	J. Bohnett	------	Dom Irr	----	8	200	----------	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SOUTH BAY AREA OF SANTA CLARA VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
5S/3W-35G1	North of intersection of Palo Alto Avenue and Hale Street.	City of Palo Alto	---	Mun	50	---	303	143-290	Yes	Yes	Yes
6S/1E-4M1	Northwest corner of intersection of Calaveras Road and Evans Road.	J. C. Rose	---	Dom	126	12-275' 10-475'	575	----	No	No	Yes
6S/1E-8N1	0.5 mile east of State Highway and 0.95 mile south of Calaveras Road.	Wrigley	----	Irr	---	16	506	200-502	Yes	No	Yes
6S/1E-21G1	100 feet northeast of Morrill Road and 0.7 mile southeast of Cropley Avenue.	V. Cortese	----	Irr	---	---	400	---	No	No	Yes
6S/1E-30M1	100 feet north of Brokaw Road and 0.64 mile east of Bayshore Highway.	M. Machado	1950	Irr Dom	47	10	250	---	No	Yes	Yes
6S/1W-1P3	200 feet west of Coyote Creek, 4000 feet northwest along Coyote Creek measured from intersection of Coyote Creek and Alviso-Milpitas Road.	Agnew State Hospital	August 1955	Irr	---	---	685	245-676	---	---	Yes
6S/1W-11B1	0.6 mile north of Highway 9 on Zanker Road, 350' west of Zanker Road.	J. W. Watrous	---	Dom Irr	---	---	360	-----	---	---	Yes
6S/1W-11D2	350 feet west of Zanker Road and 0.60 mile north of State Highway 9.	J. W. Watrous	1950	Dom Irr	---	16-120'	420	----	No	Yes	Yes
6S/1W-14L4	50 feet north of San Jose-Alviso Road and 0.45 mile northwest of State Lane.	D. Burrell	---	Irr Dom	---	---	700	----	No	No	Yes
6S/1W-16A1	Southwest side of Santa Clara-Alviso Road and 925 feet southeast of intersection Mountain View Road and Santa Clara-Alviso Road.	R. P. Collier Corp.	October 1945	Ind	---	12	551	-----	Yes	No	Yes
6S/1W-19E1	10 feet west of Fair Oaks Avenue and 0.25 mile south of Mountain View-Alviso Road.	Fred Lara	----	Dom Irr	---	---	485	286-475	Yes	No	Yes
6S/1W-26D1	0.3 mile east of Santa Clara-Alviso Road and 0.3 mile south of Montague Road.	T. A. Wilcox Bros.	1930	Irr	29	12	640	419-637	Yes	Yes	Yes
6S/1W-29G1	0.1 mile east of Lasrence Road and 0.25 mile south of Agnew Road. North side of unknown road.	Ketchum	---	Irr	36	12	250	---	No	Yes	Yes
6S/1W-33C1	0.8 mile east of Lawrence Road and 0.2 mile south of Kifer Road.	Marionelli Bros.	---	Dom Irr	---	---	229	----	No	No	Yes
6S/2W-7G1	0.1 mile west of Middlefield Road and 0.28 mile southeast of Loma Verde Avenue, on north side of Dry Creek.	Swimmel	---	Irr	---	16	555	160-548	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
SOUTH BAY AREA OF SANTA CLARA VALLEY (Continued)

WELL DATA

SOUTH BAY AREA OF SANTA CLARA VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDBM											
6S/2W-9G1	0.4 mile north of Charleston Road and 0.3 mile west of Stierlin Road.	M. Hani		Irr	---	---	48	----	---	---	Yes
6S/2W-9H1	Northwest corner of intersection of Stierlin Road, and Silver Road.	F. Ormsby	5-15-48	Dom	6	6	200	163-185	Yes	Yes	Yes
6S/2W-14R1	Southeast corner of Moffett Field and 50 feet north of Bayshore Highway.	M. H. Holthouse	1950	Irr Dom	41	12	868	207-682	Yes	Yes	Yes
6S/2W-16Q1	0.25 mile west of Stierlin Avenue and 0.4 mile north of Alma Street.	Ormande	---	Irr Dom	---	12	500	---	No	No	Yes
6S/2W-17D1	0.4 mile southwest of Middlefield Road on Charleston Road, and 0.15 mile south of Charleston Road.	City of Palo Alto			18.25		225		---	---	Yes
6S/2W-17H1	0.1 mile northwest of San Antonio Road on northeast side of Alma Street.	Antoku	---	Irr Dom	---	---	376	207-345	Yes	No	Yes
6S/2W-22M2	50 feet north of Maude Avenue at junction of Maude Avenue and Mary Avenue.	M. Yano	---	Irr	---	12	550	302-535	Yes	No	Yes
6S/2W-28R1	West side of Grant Road and 0.5 mile south of U. S. Highway 101.	W. E. Joseph	---	Irr	---	---	320	190-316	Yes	No	Yes
6S/2W-29D2	250 feet north of Almond Avenue and 0.3 mile east of San Antonio Avenue.	Slonaker	1934	Irr Dom	140	12	500	----	No	Yes	Yes
6S/2W-34M1	North side of Levin Avenue and 0.11 mile east of Grant Road.	H. Mantelli	1926	Irr Dom	---	12	660	----	No	Yes	Yes
6S/2W-36R2	50 feet north of Reed Avenue and 0.55 mile east of U. S. Highway 101.	O.P. Gluhaich	---	Irr	112	12	480	184-456	Yes	Yes	Yes
6S/3W-1R1	On west side Newell Road and 0.09 mile north of Embarcadero Road.	City of Palo Alto	1954	Mun	---	14	900	130-440	Yes	Yes	Yes
6S/3W-2D1	On east corner of intersection of Hawthorne Avenue and Southern Pacific Railroad.	City of Palo Alto	1926	Mun	---	14	367	1[illegible]-337	Yes	Yes	Yes
6S/3W-12C1	Northeast corner of intersection of College Avenue and Park Blvd. Back of Fire house Number 2.	City of Palo Alto	1931	Mun	32	14	526	155-522	Yes	Yes	Yes
7S/1W-3G1	0.1 mile east of Scott Lane and 0.15 mile north of U. S. Highway 101.	L. E. Inman	____	Irr	---	14	550	---	No	No	Yes
7S/1W-8H1	50 feet north of Homestead Aveque and 0.33 mile east Lawrence Station Road.	A. W. Kenyon	---	Irr	---	10	340	162-305	Yes	No	Yes
7S/2W-11R1	100 feet east of Stelling Road and 0.4 mile south of Homestead Avenue.	Arch Wilson	---	Irr	---	14	450	---	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

LIVERMORE VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
1D&M											
2S/1W-22A1	0.35 mile east of State Highway 21 and 2.0 miles south of Crow Canyon Road intersection.	T. P. Bishop Co.	1941	Irr	---	12-160' 10-450'	450	-----	Yes	No	Yes
2S/2E-27C1	0.3 mile north of Raymond Road and 0.05 mile East of Dagnino Road.	Peter Dagnino	---	Dom	---	---	---	-----	---	---	Yes
2S/2E-35G1	75 feet east of Vasco Road and 50 feet south of Scenic Avenue.	John H. Hanna	---	Dom	528.3	6	---	-----	Yes	No	Yes
3S/1W-1G1	300 feet north of U. S. Highway 50 and 1.0 mile east of Dublin. Well at windmill.	E. B. & J. Nevin	---	Stock	---	---	---	-----	---	Yes	Yes
3S/1E-7R1	1.3 miles south of Highway 50, 0.4 mile east of Hopyard Road.	Welfare Farm	---	Irr	---	12	---	-----	---	---	Yes
3S/1E-8H2	0.85 mile south of U. S. Highway 50 and 100 feet west of Santa Rita Road. 100 feet south of Arroyo Las Positas.	U. S. Air Force	1942	Dom Irr	---	---	205	-----	---	No	Yes
3S/1E-10E1	0.25 mile east of Martin Avenue and 0.45 mile north of Pleasanton Avenue.	E. Mayo	---	Irr	356.57	---	195	-----	---	Yes	Yes
3S/1E-11H1	1.2 miles west of Isabel Avenue on Livermore-Pleasant Road and 1.2 miles north on dirt road.	E. Hagemann	August 1949	Dom Irr	372.92	---	303	200-303	Yes	Yes	Yes
3S/1E-13P2	0.75 mile south of Livermore-Pleasanton Road on Isabel Avenue and 0.55 mile west of Isabel Avenue.	California Rock and Gravel Co.	1933	Dom	---	12	400	-----	Yes	No	Yes
3S/1E-14F1	1.55 miles west of Isabel Avenue and 100 feet north of Livermore-Pleasanton Road. Across railroad tracks.	G. G. Jamieson	1918	Irr	379.55	12	180	-----	Yes	Yes	Yes
3S/1E-15L1	500' north of Livermore Pleasanton Road and 200 feet east of Kaiser Road.	H. J. Kaiser	1946	Dom Irr	---	12	304	74-187; 210-298	Yes	---	Yes
3S/1E-16H1	0.2 mile northwest of Livermore-Pleasanton Road and 250 feet west of Kaiser plant office at Radum.	H. J. Kaiser	1945	Ind	361.38	18	305	---	Yes	No	Yes
3S/1E-19A5	0.8 mile west of Western Pacific Railroad crossing on Bernal Avenue and 0.2 mile north of Bernal Avenue.	San Francisco Water Department	---	Mun Irr	---	12	220	---	Yes	No	Yes
3S/2E-1A1	0.2 mile west of Greenville Road and 0.2 mile southeast of S. P. R. R. tracks.	John Spark	---	Dom	---	---	---	---	---	---	Yes
3S/2E-3R1	0.2 mile west of Railroad crossover and 100 feet north of Railroad tracks.		---	Irr	---	---	---	---	---	---	Yes
3S/2E-4H2	0.75 mile west of Livermore turnoff on U. S. Highway 50 and 100 feet north of U. S. Highway 50 and 0.15 mile east.	California Water Service Co.	---	Mun	520	---	---	---	---	No	Yes
3S/2E-4M1	0.05 mile north of Las Positas Road and 0.4 mile east of Beck Road.	J. Schenone	---	Irr Dom	---	---	---	---	---	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

LIVERMORE VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
3S/2E-7K1	0.7 mile west of Rincon Avenue and 250 feet north of Olivina Avenue.	H. L. Hageman	October 1938	Irr	----	12	230	------	Yes	Yes	Yes
3S/2E-8E1	0.2 mile west of Rincon Avenue and 0.8 mile north of Livermore-Pleasanton Road.	City of Livermore	----	Mun	---	---	---	-----	---	No	Yes
3S/2E-8H1	30 feet south of Elm Street and 30 feet west of Livermore Avenue in Livermore.	California Water Service Co.	1929	Mun	473.5	12	625	-----	Yes	Yes	Yes
3S/2E-10E1	0.5 mile north of East Avenue and 75 feet west of Hillcrest Avenue.	J. H. Barber	August 1948	Dom Irr	---	10	201	-----	Yes	Yes	Yes
3S/2E-11M1	0.2 mile west of Taylor Avenue and 0.35 mile north of East Avenue.	W. C. Wagoner	January 1942	Irr	584.9	12	621	-----	Yes	Yes	Yes
3S/2E-17B1	At west corner of intersection of 4th Street and College Avenue in Livermore.	California Water Service Co.	1948	Mun	493	14-620' 12-760'	760	-----	Yes	No	Yes
3S/2E-17K1	0.45 mile south of Mocho Street and 0.4 mile west of Vallecitos on south side of private road.	W. Wagoner	1929	Irr	458.38	12	401	-----	Yes	Yes	Yes
3S/2E-20K1	0.5 mile East of Vallecitos Road; 0.3 mile south of "C" Street.	F. A. Wagner	September 1949	Dom Irr	---	10	300	-----	Yes	Yes	Yes
3S/2E-21E1	0.8 mile south of Tesla Road on west side of Marine Avenue.		---	Irr	---	---	---	----	---	---	Yes
3S/2E-22E1	0.75 mile south of Tesla Road and 20 feet west of Marina Avenue.	A. A. Kirkman	February 1948	Irr	571.9	10	445	----	---	Yes	Yes
3S/2E-22H1	0.3 mile south of Tesla Road on Mines Road; 0.1 mile west of Mines Road.	Wente Bros.	----	Dom	---	---	---	----	----	---	Yes
3S/2E-29D1	0.5 mile south of Alden Lane and 100 feet west of Vallecitos Road.	B. C. Wood	October 1948	Irr	467.26	12	500	----	----	Yes	Yes
3S/3E-7D1	0.25 mile east of Greenville Road and 0.1 mile south of Patterson Pass Road.	Mingoia Bros.	---	Dom	645.6	---	400	----	----	---	Yes
3S/3E-19D1	0.4 mile east of Greenville Road and 0.15 mile south of Tesla Road.	Joe Amaral	---	Irr Dom	740.8	10	300	----	----	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

PAJARO VALLEY, SANTA CRUZ-MONTEREY COUNTIES

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
12S/1E-10H1	4.5 miles north on San Andres Road from intersection Beach Road, 0.7 mile west.	Rinaldi Bros.	---	Irr	---	12	250	---	---	---	Yes
12S/1E-14A1	1.4 miles north of Beach Road on San Andres Road, 0.1 mile west of San Andreas Road.	C. H. Wait	---	Irr	---	12	200	---	---	---	Yes
12S/1E-24G1	Northeast side of Beach Road and 0.7 mile southwest of San Andres Road.	Strobel	---	Irr	9.4	---	---	---	No	Yes	Yes
[illegible]-24M1	75 feet southeast of west end of Beach Road at Camp Goodall.	E. L. Padden	1880	Dom	---	8	300	---	No	No	Yes
12S/1E-25A3	1.3 miles south of intersection of San Andres and Beach Roads and 1.0 mile southeast of Beach Road.	C. McCollum	1947	Irr	8.3	12	198	---	Yes	Yes	Yes
12S/1E-25B2	0.8 southeast of Beach Road and 0.5 mile east of Bay.	T. C. Morley	1950	Dom Irr	7.0	12	600	---	No	No	Yes
12S/1E-25C1	0.6 mile southeast of Beach Road and 0.5 mile west of Pajaro River.	Tottino	July 1954	Irr	---	12	604	---	Yes	---	Yes
12S/2E-7K1	1.5 miles northeast of San Andres Road and 0.7 mile northwest of Beach Road and 0.25 mile southwest of Lee Road.	A. L. Waugaman	April 1947	Irr	20	12	263	---	Yes	No	Yes
12S/2E-8P1	Northwest side of Beach Road, 0.2 mile northeast of Lee Road.	Muramoto	---	Dom Irr	16.5	---	160	85-130	Yes	Yes	Yes
12S/2E-12E1	2.6 miles east of intersection of San Juan Road and Pajaro River and 0.1 mile north of San Juan Road.	Sheehy	1934	Irr	48.7	12	200	130-168	Yes	Yes	Yes
12S/2E-18A3	30 feet northwest of Beach Road and 0.5 mile southwest of Lee Road.	Mine	1945	Irr	14.0	12	170	---	No	Yes	Yes
12S/2E-18D1	0.1 mile southeast of Watsonville Slough and 0.25 mile northeast of San Andres Road Bridge.	E. Struve	March 1939	Irr	12	12	135	90-125, wood plug	Yes	No	Yes
12S/2E-18J1	50' N of Pajaro River, 0.69 mile N E of Thurwacther Road.	F. Kellog	---	Irr	---	---	---	---	---	---	Yes
12S/2E-30F1	1142 Trafton Road and 3.5 miles west of State Highway 1	Yappert	April 1934	Irr	87.4	12	360	300-360	Yes	Yes	Yes
12S/2E-30N1	0.6 mile northwest of Jensen Road and 1.3 miles west of State Highway 1.	Fenoglio	1946	Irr	71.0	12	180	140-180	Yes	Yes	Yes
12S/2E-30P1	0.25 mile northwest of Jensen Road and 1.1 miles west of State Highway 1.	R. E. Hurley	---	Irr	72.5	12	150	110-150	No	Yes	Yes
12S/2E-31K1	0.5 mile south of Jensen Road and 1.0 mile west of State Highway 1.	F. Tornavaca	---	Irr	30.0	12	219	164-219	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

PAJARO VALLEY, SANTA CRUZ-MONTEREY COUNTIES (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
12S/2E-32K1	0.1 mile east of State Highway 1 and 0.75 mile south of Jensen Road.	Johnson	1948	Irr	172.2	12	356	——	No	No	Yes
13S/1E-1A1	0.3 mile east of Bay and 0.5 mile northeast of Jensen Road.	R. H. Willoughby	——	Irr	5.3	——	——	——	Yes	Yes	Yes
13S/2E-6B1	1.0 mile west of State Highway 1 on east side of McClusky Slough.	Farley Fruit Co.	——	Irr	14.5	——	——	——	Yes	Yes	Yes
13S/2E-6E1	1.5 miles west of State Highway 1 and 0.4 mile south of McClusky Slough.	G. Hurley	——	Irr	28.6	——	250	——	No	Yes	Yes
13S/2E-6F3	1.2 miles west of Highway 1 on Giberson Road.	George H. Hurley	1945	Irr	——	12	350	210-310; 310-350	——	——	Yes
13S/2E-6K2	0.15 mile north of Giberson Road and 0.90 mile west of junction of Struve Road and Watsonville Salinas Highway.	D. Ecaney	——	Irr	22.7	——	160	——	No	Yes	Yes
13S/2E-7B1	0.25 mile west of State Highway 1 and 0.65 mile south of McClusky Slough.	F. Cappuro	January 1946	Irr	19	12	159	120-159	Yes	Yes	Yes
13S/2E-7B2	0.25 mile west of State Highway 1 and 0.70 mile south of McClusky Slough.	F. Cappuro	January 1946	Irr	12.8	12	228	158-208	Yes	Yes	Yes

TABLE
WELL DATA
SALINAS VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
13S/2E-7R1	0.75 mile north of Moss Landing and 500 feet northeast of Highway.	Monterey Bay Salt Co.	---	Dom Ind	---	---	740	-----	---	No	Yes
13S/2E-16E1	1.0 mile northeast of Permanente Plant and 0.3 mile north of Dolan Road.	M. Minhoto	---	Irr	20.0	12	174	-----	Yes	Yes	Yes
13S/2E-19R1	1.0 mile south of Moss Landing, just west of house.	T. Leaonardini	March 1947	Dom Irr	13.2	16-10	508	-----	Yes	Yes	Yes
13S/2E-20R1	0.75 mile east of Moss Landing Road and 0.4 mile east of Permanente #2 operating pump.	Jenny Tate	----	Irr	14	12	---	-----	---	Yes	Yes
13S/2E-29C4	1.1 mile northwest of Castroville and 660' East of Castroville, Moss Landing Highway.	Permanente Metals Corp.	April 1947	Ind	---	---	813	-----	No	No	Yes
13S/2E-30L1	On Shore Ranch between building and Tembaladero slough crossing.	J. J. King	---	Irr	---	---	---	-----	---	---	Yes
13S/2E-31D1	West of buildings on Klarnock Shore Ranch.	J. J. King	1945	Irr	---	16	559	-----	Yes	---	Yes
13S/2E-31K2	Southwest corner of junction of Molera and Mulligan Hill Road.	Molera Estate	1944	Dom	---	12	211	-----	---	---	Yes
13S/2E-31L1			---	Irr	---	---	---	-----	---	---	Yes
13S/2E-31M2	0.5 mile north of Mulligan Hill and 0.3 mile northeast of Mulligan Hill Road.	E. Bellon	October 1952	Irr	9.1	---	----	-----	Yes	Yes	Yes
13S/2E-31N2	0.75 mile southwest on Mulligan Hill Road from junction of Molera Road.	E. Bellone, et al.	1947	Irr	---	16	576	-----	Yes	Yes	Yes
13S/2E-32C1	0.5 mile west of Castroville, and northwest of Molera Road.	C. P. Overhouse	October 1949	Irr	8.8	16-10	562	-----	Yes	Yes	Yes
13S/2E-32J1	0.5 mile west of Castroville.	Cooper Estate	1939	Irr	---	16	193	-----	Yes	---	Yes
13S/2E-32N1	1.2 mile north of Nashua on west side of Molera Road.	Molera Estate	----	Irr	---	16-10	602	-----	Yes	---	Yes
13S/2E-33E1	0.5 mile west of Castroville and 0.3 mile north of Fort Ord Road.	Dorothy V. Orcutt, et al.	----	Irr	8.8	12	180	-----	No	---	Yes
13S/2E-33R1	600 feet West of Salinas-Castroville Highway and 0.25 mile south of Fort Ord Highway.	Caterina Risotti	----	Irr	24.8	12	---	-----	---	---	Yes
14S/2E-4G1	0.15 mile southwest of Blanco-Nashua Road and 1.3 miles southeast of Monterey Branch Railroad.	Dorothy V. Orcutt, et al.	----	Irr	19.0	12	---	-----	---	Yes	Yes
14S/2E-5R2	0.5 mile south of Nashua, 100 feet west of Molera Road.	Molera Estate	----	Irr	15.0	12	191	-----	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SALINAS VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
14S/2E-6Q1	0.25 mile east of Salinas River, 0.5 mile north of Fort Ord Highway.	Mrs. Lottie Martin	June 1948	Irr	13.0	16 & 10	553	—	Yes	Yes	Yes
14S/2E-6R2	0.25 mile east of Salinas River and 0.25 mile north of Fort Ord Highway.	E. Struve et al	Feb 1948	Irr	—	16 & 10	604	—	Yes	—	Yes
14S/2E-9K1	0.15 miles southwest of Blanco-Nashua Road and 1.3 miles southeast of Monterey Branch Southern Pacific Railroad.	Dorothy V. Orcutt, et al	—	Irr	18.9	12	—	—	—	Yes	Yes
14S/2E-11D1	0.75 mile east of Salinas-Castroville Highway and 1.0 mile south of Neponset Road.	J. P. Rodgers	1943	Dom Irr	—	12	159	—	Yes	Yes	Yes
14S/2E-12Q1	1.5 mile east of Salinas-Castroville Highway, 0.8 mile west of Graves-Gularte Road.	E. C. Eaton	—	Irr	63.0	16	619	—	Yes	Yes	Yes
14S/2E-14N1	0.5 mile west of junction of Salinas-Castroville Highway and Cooper Road.	L. A. Wilder	—	Dom	—	10	304	—	Yes	Yes	Yes
14S/2E-15L1	Just west of Nashua Road and 0.5 mile northwest of its junction with Cooper Road.	Monterey County Bank	—	Irr	24.0	12	175.5	—	Yes	Yes	Yes
14S/2E-16A1	0.1 mile southwest of Blanco-Nashua Road and 1.4 miles northwest of its junction with Cooper Road.	John W. Orcutt	—	Irr	23.1	12	—	—	—	—	Yes
14S/2E-18D1	0.75 mile southwest of Neponset Station.	J. G. Armstrong Co.	—	Irr	7.0	12	135	—	Yes	Yes	Yes
14S/2E-23J1	0.4 mile west of Castroville-Salinas Highway and 0.6 mile west of Graves School.	A. H. Bordges	—	Irr	38.0	12	200	—	—	Yes	Yes
14S/2E-24E1	Southeast corner of junction of San Jon Road and Salinas-Castroville Highway.	M. T. DeSerpa	May 1951	Dom Irr	—	12	467	—	Yes	No	Yes
14S/2E-25B1	—	M. T. DeSerpa	—	Irr	—	—	—	—	—	—	Yes
14S/2E-26A1	—	—		Irr	—	—	—	—	—	—	Yes
14S/2E-35Q1	0.2 mile east and 1.0 mile south of Blanco School.	David P. McFadden	—	Irr	34.0	—	—	—	—	Yes	Yes
14S/3E-30E1	0.3 mile west of Calvary Cemetery.	Annie Lanini	—	Irr	—	12	—	—	—	Yes	Yes
14S/3E-30F1	—	—	—	—	—	—	—	—	—	—	Yes
14S/3E-33Q1	Northeast corner Griffen and Aisal Streets in Salinas.	Pacific Gas & Electric Co.	—	Mun	47.6	12	—	—	—	—	Yes
15S/2E-1A1	On Davis Road, 0.5 mile southwest of junction with Graves-Blanco Road.	James P. Dolan	—	Irr	34.4	12	—	—	—	Yes	Yes
15S/2E-2Q1	West of Salinas River and 1.0 mile northwest of Davis Road Crossing.	Les Jacks	—	Irr	—	12	—	—	—	—	Yes
15S/3E-4L1	0.5 mile southwest of junction at Romie Lane and Highway 101 south.	David P. McFadden, et al	—	Irr	57.2	12	—	—	—	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SALINAS VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
15S/3E-5K3	Just south of Monterey on State Highway and 0.5 mile north of Hunter Lane.	Teress Storm, et al	——	Irr	47.6	12	225	———	Yes	No	Yes
15S/3E-6L1	0.6 mile south of Davis Road, just east of Hitchock Road.	T. & M. Yuki	——	Irr	37.5	12	194	———	Yes	Yes	Yes
15S/3E-7D1	0.5 mile north on Foster Road from Davis Road junction.	F. Ciottinini	———	Dom Irr	40.0	12	176	———	Yes	———	Yes
15S/3E-8N1	At junction of Monterey State Highway and Foster Road.	Laura C. Foster	———	Irr	47.4	12	——	———	——	Yes	Yes
15S/3E-16M1	0.4 mile west of intersection of Harkins Lane and Spreckels Road in Spreckels, 100 feet north of Spreckels Road.	Spreckels Sugar Co.	———	Irr	58	12	———	———	———	Yes	Yes
15S/3E-20D1	300 feet west of Salinas River on River Road. 0.75 mile south of Monterey State Highway.	J. Violini	———	Irr	55	16	503	———	———	Yes	Yes
16S/4E-12N1	0.3 mile northeast of Highway 101 and 1.55 miles northwest of its intersection with Old Stage Road.	E. Bsdella	———	Irr	110	12	285	———	———	Yes	Yes
16S/4E-24B1	0.1 mile southwest of Highway 101 opposite intersection with Old Stage Road.	K. R. Nutting	——	Irr	114	12	——	———	———	——	Yes
16S/4E-25L1	Near Gonzales	J. C. Twisselman	———	———	———	——	——	———	———	———	Yes
17S/6E-27K1	Near Soledad	———	———	Irr	———	——	——	———	———	———	Yes
17S/6E-35F1	2.2 miles southeast along R. R. from Highway 101 crossing at Soledad, just south of Southern Pacific Railroad.	Mart Baker	1940	Irr	227	16	242	———	Yes	Yes	Yes
18S/6E-1M1	2.3 miles upstream from Soledad Bridge and 0.8 mile south of Salinas River.	L. M. and V. Jacks	———	Irr	———	12	——	———	——	———	Yes
18S/6E-2N1	0.5 mile northeast of Highway 101; 1.75 miles southeast of intersection of Highway 101 and Arroyo Seco Road.	L. Jacks	———	Irr	210	12	———	———	———	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

CARMEL VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MD&W											
16S/1W-13J1	0.3 mile southeast of junction Carmel Valley Highway and State Highway #1; 0.15 mile southeast of State Highway #1.	Hudson and Fuller	1942	Irr	---	14	155	---	---	---	Yes
16S/1W-13L1	0.2 mile northwest of State Highway 1 and 0.1 mile southwest of Carmel River.	B. Odello	---	Irr	---	12	133	---	---	Yes	Yes
16S/1W-13Q1	0.25 mile southeast of State Highway and 0.15 mile southwest of Carmel River.	B. Odello	1946	Irr	---	12	112	---	---	Yes	Yes
16S/1W-13Q2	On northwest side of State Highway 1 and 0.1 mile southwest of Carmel River Bridge.	B. Odello	---	Irr	---	---	130	---	---	---	Yes
16S/1E-16N1	2.25 mile east of State Highway 1 along Carmel Valley Road and 0.7 mile south of Carmel Valley Road.	Carmel Valley Dairy	---	Irr	---	12	110	---	---	Yes	Yes
16S/1E-18F1	0.3 mile east of State Highway 1 and 0.25 mile south of Carmel Valley Road.	E. and W. Hatton	---	Irr	---	12	135	---	---	Yes	Yes
16S/1E-18Q1	0.2 mile east of State Highway 1 and 0.3 mile south of Carmel Valley Road.	E. and W. Hatton	---	Irr	---	12	135	---	---	Yes	Yes
16S/1E-18P1	1.5 miles upstream from intersection of Carmel River and State Highway 1 and 100 feet south of Carmel River.	B. Odello	1931	Irr	---	12	101	---	---	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SANTA MARIA VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
9N/32W-7R1	0.8 mile east of Sisquoc, 0.18 mile north of Highway 40 and 30 feet east of rock crusher in frame pumphouse.	F. H. Gates	——	Ind	——	16	320	——	——	No	Yes
9N/33W-8K1	1.35 miles east of U. S. Highway 101 and 0.5 mile north of Sisquoc-Orcutt Road.	K. B. Morswing	——	Dom	——	6	543	——	——	No	Yes
9N/33W-9A1	0.1 mile west of Bradley Canyon Road and 0.15 mile south of Cary Road.	W. E. Houke Estate	——	Dom	550	10	220	——	——	Yes	Yes
9N/33W-12R1	0.1 mile west of State Highway 140 behind Blockman School in Sisquoc.	Blockman School	——	Dom	——	8	312	——	——	No	Yes
9N/34W-9E1	On south side of State Highway 1 and 1.0 mile west of Lower Orcutt Road.	Mattia Bognuda	——	Irr	——	14	377	——	——	Yes	Yes
10N/34W-16R1	On west side of Blasser Road and 0.15 mile north of Stowell Road.	K. Dart	——	Irr	205	16	268	——	——	Yes	Yes
10N/34W-17H1	——	LeRoy	——	Irr	——	——	——	——	——	——	Yes
10N/34W-19H1	50 feet west of Block Road and 50 feet north of Santa Maria Valley railroad crossing.	Union Sugar Co.	——	Irr	——	16	362	——	——	No	Yes
10N/34W-19R1	On west side of Block Road and 0.35 mile north of Betteravia Lateral.	Union Sugar Co.	——	Irr	——	——	——	——	——	Yes	Yes
10N/34W-23R2	On west side of Nance Road and 0.9 mile south of State Highway 140.	Joseph E. Enos	——	Irr	——	18	333	——	——	Yes	Yes
10N/34W-26H2	50 feet west of Nance Road and 1.6 miles south of State Highway 140.	A. Fernandez	——	Irr	——	14	452	——	——	No	Yes
10N/34W-28A1	35 feet west of Vlosser Road and 400 feet north of Del Porto Road.	George Pertusi	——	Irr	——	——	235	——	——	Yes	Yes
10N/34W-35A1	0.45 mile southeast of junction of Lower Orcutt Road on U.S. Highway 101 and 0.8 mile east, opposite Rembusch No. 1 oil well.	——	——	Dom	——	6	248	——	——	No	Yes
10N/35W-9F1	——	Waller Franklin Seed Co.	——	Irr	——	——	——	——	——	——	Yes
10N/35W-9N1	——	Agnes F. King	——	Irr	——	——	——	——	——	——	Yes
10N/35W-11C1	——	M. Mendoza	——	Irr	——	——	——	——	——	——	Yes
10N/35W-21B1	——	C. F. Mathison	——	Irr	——	——	——	——	——	——	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (feet above mean sea level unless otherwise indicated)

WELL DATA

CUYAMA VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBM											
10N/25W-20H1	North side of State Highway 166 and 1.5 miles east of Cuyama River Bridge.	H. S. Russel	----	Irr	2335	16-10	656	108-656	Yes	No	Yes
10N/25W-22E1	North side of State Highway 166 and 2.7 miles east of Cuyama River Bridge.	E. H. Mettler & Sons	----	Irr	2368	16-10	659	108-402; 408-655	Yes	Yes	Yes
10N/25W-22P1	0.45 mile south of State Highway 166 and 3.2 miles east of Cuyama River Bridge.	E. H. Mettler & Sons	----	Irr	2392	16-10	660	108-402; 408-655	Yes	No	Yes
10N/25W-23E1	On north side of State Highway 166 and 4.0 miles east of Cuyama River Bridge.	E. H. Mettler & Sons	----	Irr	2397	16-12-10	810	175-810	Yes	No	Yes
10N/25W-30F1	0.8 mile south of State Highway 166 at Cuyama School on east side of dirt road.	Adolph Kirschenmann	----	Irr	2320	16	376	124-232; 241-370	Yes	No	Yes
10N/25W-30K1	---	----	----	Irr	----	----	----	----	----	----	Yes
10N/25W-30R1	1.35 miles south of State Highway 166 at Cuyama School and 0.5 mile east on dirt road.	Adolph Kirschenmann	----	Irr	2360	14	372	120-140; 192-369	Yes	No	Yes
10N/25W-32C1	1.35 mile south of State Highway 166 at Cuyama School and 1.0 mile east on dirt road, in stock pen.	-----	----	Dom	----	----	----	-----	No	No	Yes
10N/25W-32H1	1.35 mile south of State Highway 166 at Cuyama School, 1.5 mile east on dirt road, then 02.5 mile south near reservoir.	---	----	Irr	----	----	----	----	No	Yes	Yes
10N/25W-35C1	1.6 miles south of State Highway 166 along U. S. Highway 395 west 0.55 mile, then south 0.2 mile.	H. C. Faulkner	----	Dom	2485	7	236	196-236	Yes	No	Yes
10N/26W-9R2	2.1 miles southeast of New Cuyama Post Office, 0.9 mile northeast of State Highway 166; then 0.65 mile northwest.	H. S. Russel	----	Irr	2135	14	380	33-131; 155-212	Yes	Yes	Yes
10N/26W-18F1	North side of State Highway 166 and 0.8 mile northwest of New Cuyama Post Office.	Mary Kelly	----	Irr	2090	14	240	58-237	Yes	Yes	Yes
10N/26W-21Q1	2.1 miles east of New Cuyama Post Office; 1.0 mile south of State Highway 166; then 0.5 mile west.	Neil Carter	----	Irr	2295	16	993	104-809	Yes	Yes	Yes
10N/26W-21R1	Alternate of 21Q1.	---	----	Irr	----	----	----	----	----	----	Yes
10N/26W-22E1	2.1 miles east of New Cuyama Post Office and 0.35 mile south of State highway 166.	E. Kirschenmann	----	Irr	2242	16	514	----	----	----	Yes
10N/26W-22J1	2.8 miles east of New Cuyama Post Office and 0.4 mile south of State Highway 166.	Goehring Bros.	----	Irr	2252	14	465	166-326; 344-454	Yes	No	Yes

WELL DATA

CUYAMA VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
10N/26W-22K1	2.1 miles east of New Cuyama Post Office; 0.6 mile south of State Highway 166 and 0.3 mile east.	E. Kirschermann	——	Irr	2252	14	507	112-190; 196-394	Yes	Yes	Yes
10N/26W-23L1	0.5 mile west of Cuyama and 0.5 mile south of State Highway 166.	Goehring Bros.	——	Irr	——	12	312	———	No	No	Yes
10N/26W-23P1	0.5 mile west of Cuyama and 0.7 mile south of State Highway 166	Goehring Bros.	——	Irr	2280	16	371	——	Yes	Yes	Yes
10N/26W-23R1	0.6 mile south of State Highway 166 in Cuyama and 0.25 mile west.	Goehring Bros.	——	Irr	2298	16	433	82-268; 274-400	Yes	No	Yes
10N/26W-24R1	0.6 miles south of State Highway 166 in Cuyama and 0.9 mile east.	A. Kirshenmann	——	Irr	2303	14	298	52-125; 137-275	Yes	No	Yes
10N/27W-11A3	1.3 miles southeast of Cuyama Highway Maintenance Station along State Highway 166 and 0.2 mile north.	W. Smith	——	Irr	1,980	16-10	533	59-275; 280-530	Yes	No	Yes
10N/27W-11C1	0.9 mile southeast of Cuyama Highway Maintenance Station along State Highway 166 and 0.25 mile north; by reservoir.	W. Smith	——	Irr	1963	14	378	36-117	Yes	Yes	Yes
10N/27W-12E1	1.4 miles southeast of Cuyama Highway Maintenance Station along State Highway 166 and 0.2 mile north.	W. Smith	——	Stock	1990	12	248	——	Yes	No	Yes
10N/27W-12J1	1.5 miles northwest of New Cuyama Post Office to cafe on State Highway 166 and then 0.4 mile north.	A. Reich	——	Irr	2035	14	——	——	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

OXNARD PLAIN BASIN

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB&M											
1N/21W-30A1	0.33 mile west of highway 101 along nueneme road and 200 feet south of Hueneme Road.	Ed Murdhardt	Apr. 1931	Irr	—	—	591	387-407; 421-434 498-512; 532-587	No	No	Yes
1N/21W-31J1	100 faet south of Casper hoad and 1.25 miles east of Casper Road where its direction is north and south.	Naval Air Station Point Mugu	—	Dom	—	10	1000	—	Yes	No	Yes
1N/21W-31L1	100 feet south of East-West Casper Road, 1.25 mile east of North-South Casper Road.	Naval Air Station Point Mugu	—	Dom Irr	—	10	1000	—	Yes	—	Yes
1N/22W-3F4	200 feet east of Saviers Road and 100 feet north of Third Street.	City of Oxnard	1912	Mun	—	—	232	—	Yes	Yes	Yes
1N/22W-7D1	East side of Dairy Bldg. near Wooley Road, 0.80 mile west of West Road and 100 feet south of Wooley Road.	D. McGrath Estate Co. (Patterson Ranch Dairy 1954)	—	Dom Stk	—	—	—	—	—	—	Yes
1N/22W-8K3	130 feet south of Howe Road, 40 feet west of Patterson Road.	J. A. Alvarez Jr.	12-15-45	Irr Dom	—	16	240	111-228	—	—	Yes
1N/22W-9J3	Approximately 1400 feet south of Howe Road extended east; 1350 feet east of Ventura Road.	Ignatius Friedrich	—	Dom Irr	—	—	154	—	—	—	Yes
1N/22W-15B3	130 feet north of Dempsey Road and 150 feet west of Ventura R. R. measured along Dempsey Road.	City of Oxnard	—	Mun	—	—	—	—	—	—	Yes
1N/22W-18E1	0.3b mile south of Oxnard Road and 75 feet east of Ocean Drive	Santa Clara Water Conservation District	—	Dom	—	12	218	196-210	No	No	Yes
1N/22W-19B3	80 feet east of Roosevelt Blvd., 20 feet north of Lakeshore at Hollywood by the sea.	Hollywood by the Sea Mutual Water Co.	2-11-54	Dom	—	10	482	198-204; 232-240 290-310	Yes	—	Yes
1N/22W-20B1	0.5 mile south of Cutting Road and 500 feet east of Patterson Road.	U. S. Navy	1914	Dom	—	—	324	268-305	No	No	Yes
1N/22W-20E1	Silver Strand Beach. South side of Highland Drive and 100 feet west of Panama Drive.	Silver Strand Mutual Water Company	Sept. 1950	Dom	—	12	242	208-220; 226-234	No	No	Yes
1N/22W-20E2	15 feet south of Highland Drive, 80 faet west of south end of Panama Drive.	Silver Strand Mutual Water Company	3-29-55	Mun	—	—	1014	940-974	Yes	—	Yes
1N/22W-21B1	0.3 mile north of Pleasant Valley Road along Ventura Road 15 feet east of East bank of drain ditch. (2400 ft. East of Ventura Road)	City of Port Hueneme	1954	Mun	—	16	386	264-386	—	—	Yes
1N/22W-21L1	Hueneme City well 9-V-15	City of Port Hueneme	—	—	—	—	272	—	No	No	Yes
1N/22W-21L2	145 feet south of intersection of Clara and East 5th. Streets.	City of Port Hueneme	4-30-52	Dom	—	16	500	—	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

OXNARD PLAIN BASIN (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M											
1N/22W-23C1	0.3 mile southwest of Pleasant Valley Road from Etting Road, 100 feet southeast 18 feet Pleasant Valley Road in farmyard.	K. L. Varnau	1938	Dom Irr poultry	---	4	230	---	---	---	Yes
1N/22W-26A1	20 feet south of Hueneme Road; 500 feet west of Casper Road.	S. R. Pidduck	May 1924	Dom Irr	---	12	236	188-229	Yes	Yes	Yes
1N/22W-28A2	0.32 mile west of Saviers Road and 20 feet south of Hueneme Road.	R. E. Lown	1949	Irr Dom	---	14	---	---	No	No	Yes
1N/22W-28H2	50 feet east of Perkins Road; 1750 feet south of Hueneme Road.	Kalof Pulp and Paper Co.	7-1-52	Dom Ind	---	10	175	135-170	Yes	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

WEST COASTAL BASIN, AREA OF SEA WATER INTRUSION

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB&M											
3S/14W-31A1	450 feet south of Gould Lane and 80 feet west of Pier Avenue Hermosa Beach.	California Water Service Co.	1902	—	—		340	—	No	No	Yes
3S/15W-12G1	El Segundo; 55 feet west of California Street, 60 feet south of Palm Avenue.	City of El Segundo	6-30-39	Mun	112.6	16	349	139-154; 205-221 292-332	Yes	Yes	Yes
3S/15W-12H3	Approximately 250 feet north of Palm Avenue and 600 feet west of Sepulveda Blvd., El Segundo.	City of El Segundo	3-21-47	Mun	—	—	—	—	No	No	Yes
3S/15W-13R2	176 feet west of Sepulveda Blvd. and 400 feet north of Rosecrans Avenue, El Segundo.	Standard Oil Co.	Aug. 1941	Ind	—	16	480	—	No	No	Yes
		WEST COASTAL BASIN, TORRANCE AREA									
4S/13W-6K1	150 feet west of Main Street and 180 feet north of Francisco Street, East of Torrance.	Ray Beauley	—	Dom	—	4	82	—	No	No	Yes
4S/13W-6Q1	115 feet west of Main Street and 120 feet north of Francisco Street, East of Torrance.	George Branning	Prior to Dec. 1934	Dom Stk	—	5	60	—	No	No	Yes
4S/14W-9b1	750 feet east of Hawthorne Avenue and 950 feet south of Torrance Blvd., Torrance.	Chansler-Confield Midway Oil Co.	10-31-23	Ind	—	12	557	—	No	No	Yes
4S/14W-16L2	100 feet east of Ocean Avenue and 725 feet south of Sepulveda Blvd., Torrance.	City of Torrance	1936	Dom Irr	76.5	14	492	195-380; 450-474	No	No	Yes
4S/14W-35E1	1650 feet south of Pacific Coast Highway, 15 feet west of Pennsylvania Avenue in metal pump house-15 feet north of concrete tank.	Edw. Sidebothem & Son Inc.	1-11-26	Ind	177.7	12	585	280-305; 450-475 482-502	Yes	Yes	Yes
4S/14W-35F2	0.46 mile south of Pacific Coast Highway and 200 feet west of Narbonne Avenue.	Chandlers Palos Verde Sand and Gravel	—	Ind	—	16	695	—	No	No	Yes

WELL DATA

WEST COASTAL BASIN, ATHENS AREA

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M											
3S/14W-19K1	120 feet south of centerline of Marine Avenue and 30 feet east of centerline of Peck Avenue, Manhatten Beach.	Arnold Mueller	1-29-47	Dom Irr	70	12	216	---	No	No	Yes
3S/14W-22R2	200 feet east of Lemoli Avenue and 110 feet south of 154th. Place.	Park Water Co.	Nov. 1942	Dom Irr Ind	51	14	227	186-214	No	No	Yes
3S/14W-23L1	Gardena; 60 feet east of East property line of Casimir Avenue and 120 feet south of South property line of Compton Blvd.	Southern California Water Co.	June	Dom Irr Ind	52	16	397	334-352	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

CENTRAL COASTAL PLAIN PRESSURE AREA

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M											
2S/13W-32C2	10 feet east of Mettler Avenue and 200 feet north of 88th place, 8814 South Mettler Avenue.	Los Angeles Department of Water & Power	5-7-38	Mun	—	14	800	604-645; 750-787	No	No	Yes
3S/13W-2B1	35 feet north of Michigan Avenue and 100 feet west of Elizabeth Avenue.	City of Southgate	——	Mun	—	12	732	—	No	No	Yes
		LOS ANGELES FOREBAY AREA									
SBB&M											
2S/13W-10P4	370 feet west of Santa Fe Aveoue and 590 feet north of Vernon Avenue, Vernon.	City of Vernon	—	—	—	18	1330	—	No	No	Yes
2S/13W-14H1	40 feet west of Downey and 40 feet north of Fruitland Avenue, Vernon.	City of Vernon	1942	—	—	18	1300	—	No	No	Yes
2S/13W-15N3	200 feet east of Alameda Street and 40 feet north of 57th. Street, Vernon.	Pioneer Paper Company	—	Ind Dom	—	16	531	—	No	No	Yes
2S/13W-28H2	90 feet north of Nadeau Street and 70 feet east of Walnut Drive, southwest of Huntington Park.	Southern California Water Company	—	Mun	142	14	195	96-116; 123-167	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

MAIN SAN GABRIEL BASIN

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB B&M											
1S/10W-7A1	400 feet south of Bonita Avenue and 50 feet west of North of Main Avenue.	Baldwin Park Company Water District	---	Dom Irr	---	16	526	---	No	No	Yes
1S/10W-10C1	0.88 mile east of Irwindale Avenue and 350 feet south of Bonita Avenue (Arrow Highway), south of Azusa.	Glendora Independent Water Company	---	Dom Irr	471	26	411	---	Yes	No	Yes
1S/10W-19N1	0.25 mile southwesterly along Virginia Avenue from intersection with Garvey Avenue and 0.05 mile southeast, southeast of El Monte.	Baldwin Park Municipal Water Company	10-14-50	Irr	---	12	150	100-136; 140-148	No	No	Yes
1S/11W-2G1	400 feet east of Peck Road and 200 feet north of road along ranch line, 0.5 mile north of Live Oak Avenue, 75 feet north of Jefferies Avenue; south of Monrovia.	City of Monrovia	---	Mun	368	26	440	73-132; 136-180 182-214; 217-350 374-420	No	No	Yes
1S/11W-10F1	850 feet east of Tyler Avenue at end of Farna Street.	Southern California Water Company	4-27-51	Mun	---	18	540	---	Yes	No	Yes
1S/11W-14M1	0.52 mile south of Cogswell Avenue from intersection with San Bernardino Road, 0.06 mile west, north of Killion Street.	Herbert Mutual Water Company	1-9-51	Dom	---	12	199	111-162; 186-194	No	No	Yes
1S/11W-26K1	Well in line with east end of Valley Blvd. Bridge over San Gabriel River, 0.1 mile north of Valley Blvd.	San Gabriel Valley Water Company	5-25-51	Mun Ind	---	---	312	---	No	No	Yes
1S/11W-32C1	0.3 mile south and 0.03 mile west of intersection of Rush Street with Potrero Avenue.	Pedro Mireles	---	Irr	---	10	102	73-97	No	No	Yes
1S/11W-33P1	55 feet south of Durfee Road and 0.46 mile southwest of Slack Avenue, south of El Monte.	A. Alluis	---	Dom	230	7	50	40-46	Yes	No	Yes
1S/12W-10E1	130 feet west of Garfield Avenue and 53 feet south of Maclean Street.	City of Alhambra	---	Mun	534	18	561	237-265; 276-300 300-325; 340-353 375-471; 483-496	No	No	Yes
1S/12W-36A3	0.25 mile south of Rush Avenue and 125 feet west of Walnut Grove Avenue.	San Gabriel Valley Water Company	8-21-37	Dom Irr	---	12	453	101-106; 165-172 180-210; 265-270 272-275; 290-303 430-433	No	No	Yes
2S/11W-5G1	1320 feet north of Centerline of Syphon Road, 1100 feet southeast of Durfee Avenue in Woodland Park, north of Whittier.	City of Whittier	---	Mun	---	24	664	100-648	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

UPPER LAKE VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
14N/9W-32L2	0.11 mile north of Soda Bay Road and 0.05 mile west of Reevee Lane.	Roscoe M. Smith	—	Irr	—	12	98	—	—	—	Yes
14N/9W-36	In Clear State Park. California Division of Beaches and Parks.		—	Dom	—	—	—	—	—	—	Yes
15N/9W-31P1	0.25 mile due south of Lakeside Hospital	C. B. Flick	1953	Dom	—	8	110	—	—	—	Yes
16N/9W-31L2	0.3 mile west and 1.45 miles north of Pitney Lane and 300 feet west of Pillsbury Lake Road, Upper Lake Valley	Antone Santos	1946	Irr	—	36	18	—	—	Yes	Yes
16N/9W-31L3	0.3 mile due west and 1.45 mile due north of Pitney Lane. North side farmhouse and west side Pillsbury Lake Road.	Antone Santos	1900	Dom	—	—	18	—	—	—	Yes
		KELSEYVILLE VALLEY									
13N/9W-2L2	East side of Soda Bay Drive (Gaddy Lane) and 0.29 mile north of Losa Drive. Kelseyville Valley.	Ross Field	—	Irr	1342.8	—	100	—	No	No	Yes
13N/9W-6C1	0.06 mile south and 0.32 mile west of Highway 29 and Soda Bay Road intersection.	E. Turner	—	Irr	1339.5	—	—	—	No	No	Yes
13N/9W-12M1	East side of private dirt road and 0.10 mile south of bend from east to north of Clarks Drive.	Lincoln Wright	1942	Irr	1357.7	—	200	—	—	—	Yes
13N/9W-17D1	0.15 mile south of Merritt Lane and .024 mile east of Davis Drive and east of Adobe Creek.	Merritt Fraser	1948	Irr	1382	12	232	—	—	—	Yes
13N/9W-17D2	South side Merritt Lane, northeast corner of farmhouse on east side Adobe Creek.	Merritt Fraser	1920	Dom	—	8	30	—	No	No	Yes
13N/9W-22M1	0.39 mile south of Gold Dust Drive and 100 feet west of Kelsey Creek Drive. Kelseyville Valley.	F. A. Gross	1926	Irr	1420	—	110	—	—	Yes	Yes
14N/9W-6A2	0.60 mile north and 0.1 mile west of Rocky Point.	Overington	—	Dom	—	—	—	—	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SUTTER-YUBA AREA, SACRAMENTO VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
12N/2E-9C1	100 feet south of Kirksville Road and 0.5 mile west of State Ranch Road.	E. K. Richter	1931	Dom	—	8	136	—	No	No	Yes
12N/2E-11N1	0.3 mile south of Hiatt Road and 100 feet east of Jewett. Road.	Garner	—	Dom	—	—	—	—	Yes	No	Yes
12N/2E-14B1	100 feet south of Varney Road and 0.05 mile east of Red Road.	—	—	Dom	—	—	—	—	—	No	Yes
12N/2E-16R1	150 feet north of Seymour Road and 150 feet west of State Ranch Road. Behind garage at west end.	L. A. Wright	1946	Dom	—	8	128	—	No	No	Yes
12N/2E-23Q1	0.75 mile south of Seymour Road and 0.2 mile east of Knights Road.	Hawn	—	Dom	—	—	—	—	No	No	Yes
12N/2E-26A1	On northwest side of State Highway 24 and 0.1 mile southwest of Robbins Road.	Hasper Hoffart	—	Dom	—	—	105	—	Yes	No	Yes
13N/3E-2C1	50 feet west of Garden Highway and 0.25 mile north of Tudor Road.	J. W. Saunders	—	Irr	43	14	97	—	No	Yes	Yes
13N/3E-3D1	50 feet east of State Highway 24 and 0.3 mile north of Tudor Road.	J. W. Saunders	—	Irr	39	—	96	—	No	Yes	Yes
13N/3E-6N1	150 feet south of Tudor Road and 0.34 mile east of Murray Road.	Bridge Investment	—	Dom	34	12	—	—	No	Yes	Yes
13N/3E-7J1	1.5 milee north of Sutter Causeway. 0.45 mile north of Everglade road. 0.15 mile west of George Washington Blvd. and 250' south to well.	N. D. Clark	—	Irr	—	14	73	—	—	—	Yes
13N/3E-10M2	1.2 mile south of Tudor Road on east side of Sawtelle Avenue	Roy Rogers	—	Dom	—	—	55	—	Yes	No	Yes
13N/3E-11Q3	150 feet east of Garden Highway and 0.1 mile south of Wilkie Avenue.	Edward Silva	—	Irr	—	12	—	—	No	No	Yes
13N/3E-13C1	0.7 mile east of Garden Highway and 0.25 mile south of Wilkie Avenue.	Boccardo Ranch	—	Irr	42	—	225	—	Yes	Yes	Yes
13N/3E-14R1	0.4 mile east of Garden Highway and 1.0 mile south of Wilkie Avenue	H. J. Cheim	—	Irr Dom	38	—	—	—	No	Yes	Yes
13N/3E-16R1	25 feet west of Sawtelle Avenue and 0.9 mile south of Everglade Road.	Lalsinghrai	—	Irr	38	20	—	—	No	Yes	Yes
13N/3E-23B1	0.1 mile east of Garden highway and 0.15 mile north of Central Avenue	Don Rouss	—	Irr	34	8	50	—	No	Yes	Yes
13N/4E-21A1	0.7 miles southeast of Swanson Road at west end of Bear River Drive.	C. M. Owen	—	Irr	50	14	110	—	No	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

WELL DATA

SUTTER-YUBA AREA, SACRAMENTO VALLEY(Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
13N/4E-23Q1	0.1 mile north of Kempton Road and 0.25 mile west of Pleasant Grove Road.	J. E. Jopson	—	Irr	63	14	—	—	No	Yes	Yes
13N/5E-7R3	On west side of Brewer Road 0.2 mile north of Bear River Drive.	Nelson	1923	Dom Irr	—	12	315	—	No	No	Yes
13N/5E-9R1	20 feet west of Placer Road and 0.5 mile north of Bear River Drive.	California Packing Corp.	—	Irr	84	14	150	—	Yes	Yes	Yes
13N/5E-19R2	On west side of Brewer Road and 0.15 mile north of Kempton Road.	E. J. Gallegher	—	Irr	—	—	—	—	No	No	Yes
14N/1E-1A1	150 feet west of Progress Road and 1.8 mile north of Oswald Avenue.	Frye Brothers	1940	Dom	—	8	70	—	No	No	Yes
14N/1E-2A1	0.3 mile east of Garmire Road and 100 feet south of White Road.	S. A. McKeehan	1910	Dom	—	6	68	—	No	No	Yes
14N/3E-3C2	150 feet south of Bogue Road and 0.1 mile west of State Highway 24.	Basant Singh	—	Irr	53	—	154	—	No	Yes	Yes
14N/3E-5A3	On west side of Grove Road and 0.15 mile south of Bogue Road.	Channah S. Srah	—	Irr	49	12	106	—	No	No	Yes
14N/3E-14E2	50 feet north of Oswald Avenue and 0.1 mile west of Garden Highway.	Littlejohn	—	Irr Dom	47	16	90	—	No	Yes	Yes
14N/3E-15R1	0.5 mile west of Garden Highway and 50 feet north of Oswald Road.	James A. Blevins	1947	Dom	—	8	120	—	Yes	—	Yes
14N/3E-16B2	100 feet south of Oswald Road and 0.3 mile west of Sawtells Avenue.	F. J. Best	January 1946	Dom Irr	—	8	99	—	Yes	No	Yes
14N/3E-18A2	0.15 mile south of Oswald Road and 0.2 mile west of George Washington Blvd.	Rennie Mahon	1914	Irr	44	12	125	—	No	Yes	Yes
14N/3E-23M2	1.4 mile north of O'Bannion Road and 0.25 mile east of Garden Highway.	C. L. Duncan	—	Irr	—	14	90	—	No	—	Yes
14N/3E-28D1	Southeast corner of intersection of Carlson Road and Hutchinson Road.	L. Ott	—	Irr	—	14	170	—	No	No	Yes
14N/3E-28R1	0.15 mile west of State Highway 24 and 0.20 mile north of O'Bannion Road.	J. Serger	—	Irr	—	14	163	—	—	—	Yes
14N/3E-31B1	0.2 mile south of O'Bannion Road and 0.4 mile west of George Washington Blvd.	L. Ott	December 1953	Irr	38	14	230	—	No	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

SUTTER -YUBA AREA, SACRAMENTO VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
15N/2E-26D2	125 feet east of Humphrey Road and 0.15 mile south of Franklin Road.	E. L. Carothers	1954	Dom	----	8	87	----	Yes	No	Yes
15N/3E-4C2	0.25 mile south of Eager Road and 0.75 mile west of U. S. Highway 99E.	A. Eager	----	Irr	62	----	147	----	No	Yes	Yes
15N/3E-26M1	0.31 mile north of Lincoln Road and 0.24 mile east of Garden Highway.	Robert Paillex	1948	Irr	52	14	250	----	Yes	Yes	Yes
15N/3E-28A2	On south side of Franklin Road and 0.15 mile west of Custott Road.	T. S. Madden	---	Irr	----	----	157	----	Yes	No	Yes
15N/3E-29G1	300 feet west of Ohleyer Road and 0.25 mile south of Franklin Road.	W. A. Glentzer	---	Irr	----	10	90	----	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SACRAMENTO COUNTY-SACRAMENTO VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
5N/5E-3F1	West side of Bruceville Road, 0.42 mile south of Lambert Road.	H. Alberg	——	Irr	20	8	68	——	No	No	Yes
6N/5E-17E1	On west side of Franklin Road; 0.2 mile south of Franklin, 50 feet south of water tower.	Fred Frey	1950	Irr	17	10	200	——	—	—	Yes
6N/6E-20F1	At Southwest corner of Stockton Blvd. and Dillard Road.	Hart Ranch	March 1933	Irr	—	—	285	——	—	Yes	Yes
7N/4E-4R1	2.2 miles northwest of Highway 24 on Pocket Road, 100 feet east of Road.	M. Perry	November 1952	Irr	7.0	12	100	——	Yes	——	Yes
7N/5E-7C1	1800 yds. west of Western Pacific R. R. tracks on Meadow View Road; 400 feet south of road.	State of California	May 1952	Dom	——	12	—	——	Yes	——	Yes
7N/5E-32J2	1450 feet north, 350 feet west of southeast corner section 32, at Camellia Dairy.	Hans Sutter	July 1948	Irr	22	12	253	——	Yes	——	Yes
7N/6E-22R1	75 feet south of second house, west side of Mecca Road, north of Sheldon Road.	E. C. Hummel	---	Dom Irr	76	10	97	---	--	---	Yes
7N/7E-27P1	At Lee School; 4.0 miles east of Dillard	School District	——	Dom	100	8	99	——	No	——	Yes
8N/4E-26D1	1.5 mile northwest of Sacramento Municipal Airport on lot 44, South Land Park Terrace Unit 20 between Rosedale and Dorset Ways; 625 feet south of Seamas Ave.	Land Park Water Maintenance Dist.	1954	Mun	---	12	146	115-132	Yes	——	Yes
8N/5E-15H1	775 feet west on Cucamonga Ave. from Power Inn Road; thence north 770 feet.	State of California	July 1952	Dom	39	12	256	——	Yes	---	Yes
8N/5E-21H2	1800 feet south of 14th Ave. on 65th Street, 125 feet east of 65th Street.	Edward A. Morris	August 1950	Dom	36	12	70	——	Yes	---	Yes
8N/5E-24M1	0.1 mile east of Florin Road and 0.3 mile north of Fruitridge Road.	Haight	——	Irr	---	--	—	---	—	--	Yes
8N/5E-30N1	4300 feet south and 1300 feet east of northwest corner section 30.	Antone Amarel	February 1951	Irr Dom	19	10	100	——	Yes	—	Yes
8N/6E-5K1	0.5 mile west of Bradshaw Road on Highway 50 to dirt road; 0.5 mile north of Highway 50.	T. Saiki	1952	Irr	—	—	180	——	——	—	Yes
8N/6E-20J1	3.0 miles south of Highway 50 on Bradshaw Road; southeast corner of intersection of Bradshaw and Jackson Roads.	F. Umeda	---	Dom Irr	63	—	88	——	No	—	Yes
9N/4E-1R1	0.21 mile north of Del Paso Road; 20 feet west of dirt road.	Hoffart	——	Irr	—	16	185	——	——	——	Yes
9N/4E-8L1	Northeast side of Garden Highway; 1.5 miles north of San Juan Road.	K. Kimura	July 1951	Irr	——	--	105	——	Yes	—	Yes
9N/4E-27F1	50 feet north of Garden Highway; 0.5 mile east of Miller Road.	L. M. Swalley	October 1950	Irr	24.5	14-10	320	——	Yes	—	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey Datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MOBILE											
9N/5E-15N1	0.1 mile east of Palm Drive on Arcade Blvd.	Citizens Utilities Co. of California	---	Dom	30	12	205	----	Yes	---	Yes
9N/5E-22L1	100 feet east of Grove Ave. on Eleanor Ave.	Citizens Utilities Co. of California	---	Dom	30	12	415	----	Yes	---	Yes
9N/5E-21C1	300 feet north of Acacia Ave. on 12th Street.	Citizens Utilities Co. of California	---	Dom	30	12	238	----	Yes	---	Yes
9N/5E-21E1	300 feet north of Alamos Ave on Branch Street.	Citizens Utilities Co. of California	---	Dom	30	12	240	----	Yes	---	Yes
9N/5E-29D1	25 feet west of Colfax Ave on Stanford Ave.	Citizens Utilities Co. of California	---	Dom	30	12	195	----	Yes	---	Yes
9N/5E-29L1	100 feet west of Canterbury Road on South Gate Road.	Citizens Utilities Co. of California	---	Dom	30	12	390	----	Yes	---	Yes
9N/5E-34A1	0.15 mile north of "C" Street. First road north; east of Tivoli way.	G. L. Weister	---	Dom	---	12	---	---	---	---	Yes
9N/6E-6D1	1300 feet north of Madison Ave. on Harrison Street.	M. Koshell	1936	Dom	---	---	65	----	---	---	Yes
9N/6E-18L1	125 feet west of Eastern Ave.; 0.2 mile south of Marconi Ave.	O. A. Melby	---	Dom	---	6	140	----	---	---	Yes
9N/6E-25M1	At Fair Oaks wye; 3.0 mile northeast of Mills on U. S. Highway 50.	J. W. Edwards	1913	Dom	---	8	260	----	---	---	Yes
9N/7E-15F1	100 feet north of old Highway 50; 0.8 mile west of Nimbus.	C. O. Kemper	---	Dom	154	---	118	----	---	---	Yes
9N/7E-16P1	50 feet north of old Highway 50; 100 feet west of west end of Packing Plant.	Libby-McNeil and Libby	1950	Ind	145	10	185	108-178	Yes	Yes	Yes
9N/7E-20H1	In green lath octagonal house on south side of Mills-White Rock Road.	Capitol Dredging Co.	---	Dom	275		25	----	---	---	---
9N/7E-26J1	7.6 miles east of Mills on Whiterock Road; 0.1 mile south of road.	Brighton Sand & Gravel Co.	---	Dom	---	---	---	----	---	---	---
9N/7E-27Q1	On south side of Mills-White Rock Road at Key School site.	M. Collier	---	Dom	235	6	---	----	---	Yes	Yes
9N/7E-28B1	At Aerojet Corp. Nimbus.	Aerojet Corp.	March 1951	Ind	180	---	325	----	Yes	---	Yes
9N/7E-28K1	800 feet south of 28B1	Aerojet Corp.	May 1956	Dom Ind	---	---	---	----	Yes	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
9N/7E-32B1	4.3 miles east of Mills on White Rock Road, 100 feet north of road.	J. A. Rogers	—	Dom	—	—	—	—	—	—	Yes
9N/7E-33E1	4.8 miles east of Mills on White Rock Road; 0.27 mile south of road.	Ben Petruci	—	Irr Dom	—	—	—	—	—	—	Yes
10N/4E-23A1	0.8 mile west of intersection of Elverta Road and West Levee road; 75 feet south of road.	Westby	1946	Dom	15	6	85	—	—	—	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
1N/6E-3H3	At Poplar and Monroe Streets, Stockton.	California Water Service Co.	June 1909	Mun	—	14 & 12	250	—	—	—	Yes
1N/6E-4D1	Southwest corner of intersection of Marine Street and Michigan Street.	California Water Service Co.	November 1945	Mun	5.7	16	575	—	—	Yes	Yes
1N/6E-4J1	At Victory Park on Pershing between Acacia and Vernal Way.	City of Stockton		Mun	—	12	250	—	—	—	Yes
1N/6E-10E1	At intersection of Weber and Pershing Avennes, Stockton	Union Ice Co.	June 1946	Ind		12	245	42-245	—	—	Yes
1N/6E-10E2	At intersection of Weber and Pershing Avenues, Stockton.	Union Ice Co.	June 1949	Ind	—	—	207	—	—	—	Yes
1N/6E-10P1	800 West Church Street, Stockton.	Fibreboard Products Co.	1922	—	—	14	1130	—	—	—	Yes
1N/6E-10P2	800 West Church Street, Stockton.	Fibreboard Products Co.	1918	—	—	—	970	—	—	—	Yes
1N/6E-14C1	At Jackson and Center Streets, Stockton.	California Water Service Co.	September 1916	Dom	—	20	491	—	—	—	Yes
1N/6E-14C2	Southeast corner of intersection of West Jackson Street and South Center Street.	California Water Service Co.	—	Mun	—	16	459	—	Yes	—	Yes
1N/6E-14M1	At Fourth and Grant Streets, Stockton.	California Water Service Co.	April 1949	Dom	—	16 & 12	418	—	—	—	Yes
2N/6E-29N1	1.9 mile west of Pacific Avenue along March Lane and 0.2 mile north.		April 1954	Irr	—	—	175	—	—	—	Yes
3N/6E-27B1	0.32 mile east of Lower Sacramento Road and 150 feet south of Armstrong Road.	G. Barbero	—	Dom Irr	—	—	—	—	—	—	Yes
4N/7E-23B2	East side of Thethaway Road and 0.1 mile south of Peltier Road.	S. Gaberoglia	—	Dom Irr	—	—	—	—	—	—	Yes
5N/5E-33J1	0.75 mile north of Walnut Grove Road on Thornton Road; on west side of Thornton Road.	Robert Nichols	—	Irr	—	—	140	—	—	—	Yes
5N/5E-33K1	0.45 mile west of Thornton Road and 0.75 mile north of Walnut Grove Road.	R. L. Barber	—	Irr	6	—	—	—	—	—	Yes
5N/8E-31J1	On west side of Dry Creek Road and 0.2 mile north of Liberty Road.	A. T. Sims	—	Irr	—	—	—	—	—	—	Yes
1S/7E-10A1	On west side of Austin Road and 0.1 mile north of Lynch Road.	—	—	Irr	42.1	—	—	—	—	—	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY (Continued)

SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
1S/9E-8H1	On west side of Escalon Road and 0.35 mile south of Skiff Road.	----	----	Irr	---	---	---	----	---	---	Yes
2S/4E-1P1	On north side of Bethany Road and 0.7 mile west of Lammere Road.	O. B. Dusing	----	Dom	---	8	233	---	---	---	Yes
3S/5E-8L1	0.4 mile east of Corral-hollow Road on dirt road and 0.5 mile south of Linne Roads.	L. huck	1933	Dom	---	8	265	---	---	---	Yes
3S/5E-35D1	On east side of Christman Road and 1.2 mile south of Delta-Mendota Canal.	W. Moler	June 1949	Irr	---	12	832	---	---	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

WEST SIDE AREA, SAN JOAQUIN VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
13S/13E-14N1	Northeast corner of intersection of Jerrold Ave. and Ashlan Ave.	Hotchkiss Estate	---	Irr	----	16	1,432	497-1432	---	---	Yes
13S/14E-34M1	On east side San Diego Avenue and 0.5 mile north of Belmont Ave.	-----	---	Dom Irr	----	---	---	------	---	---	Yes
13S/13E-12N1	Northeast corner of intersection of Newcomb Avenue and California Avenue.	Pappas & Co.	---	Irr	----	16	1,450	599-1450	---	Yes	Yes
14S/13E-21N1	Northeast corner of intersection of Fairfax Avenue and North Avenue.	Emp Enter.	---	Irr	----	---	1,889	630-1889	---	---	Yes
14S/13E-22N1	On north side of North Avenue and 1.0 mile east of Fairfax Ave.	Emp. Enter.	---	Irr	----	16	1,710	524-1710	---	---	Yes
14S/13E-25N1	Northeast corner of intersection of Central Avenue and Newcomb Avenue.	Pilibos Bros.	---	Irr	----	16	1,687	785-1685	---	Yes	Yes
14S/14E-9M1	On east side of Washoe Avenue and 0.3 mile north of California Avenue.	Pappas & Co.	---	Irr	----	16	1,400	------	---	---	Yes
14S/14E-11N1	On east side of San Bernarndino Avenue and 0.1 mile north of California Avenue.	Vista Del Llano	---	Irr	----	16	696	------	---	---	Yes
14S/14E-12N1	On east side of Onio Avenue and 0.1 mile north of California Avenue.	Jack Scanes	---	Irr	----	16	900	520-900	---	---	Yes
14S/14E-17Q1	300 feet north of Jensen Avenue and 0.5 mile west of Washoe Avenue.	William Giacone	---	Irr	----	---	850	520-850	---	---	Yes
14S/14E-28E1	On east side of Washoe Avenue and 0.4 mile south of North Ave.	Murietta Farms	---	Irr	----	16	1,195	488-bottom	---	---	Yes
14S/15E-31N1	Northeast corner of intersection of State Highwey 33 and Washington Avenue.	L. A. & J. W. Jones	---	Irr	----	---	1,200	300-1200	---	Yes	Yes
15S/12E-1A1	Northeast corner of intersection of Lincoln Avenue and Millux Avenue.	Emp. Enter.	---	Irr	----	16	1,873	639-1873	---	Yes	Yes
15S/13E-5R1	On north side of Lincoln Avenue and 0.2 mile west of Fairfax Avenue.	Emp Enter.	---	Irr	----	16	1,528	591-1528	---	Yes	Yes
15S/14E-4D1	Scutheast corner of intersection of Washoe Avenue and Washington Avenue.	Murietta Farms	---	Irr	----	16	1,655	470-1655	---	---	Yes
15S/14E-36Q2	On north side of Floral Avenue and 0.5 mile west of State Highway 33.	F. A. Yearout	---	Irr	----	16	1,734	732-1734	---	Yes	Yes
15S/15E-20N2	Northeast corner of intersection of Manning Ave. and Monterey Avenue.	Pucheu	---	Irr	----	16	---		---	---	Yes
15S/15E-25N1	Northeast corner of intersection of Tuolumne Avenue and Dinuba Avenue.	Reese Bros.	---	Irr	----	12	532		---	Yes	Yes
15S/15E-27N1	Northeast Corner of intersection of Floral Avenue and San Mateo Avenue.	Reese Bros.	---	Irr	----	16	589		---	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

WEST SIDE AREA, SAN JOAQUIN VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
15S/15E-35N1	Northeast corner of Floral Avenue and San Mateo Avenue.	------	---	Irr	---	---	---	---	---	---	Yes
15S/16E-7Q1	North side of Adams Ave. and 0.65 mile east of Calaveras Ave.	------	---	Irr	---	---	---	---	---	---	Yes
16S/14E-10Q1	North side of Mountain View Avenue and 1.3 mile west of Ohio Avenue.	William Deal	---	Irr	---	16	1685	---	---	---	Yes
16S/15E-8N1	Northeast corner of intersection of Mountain View Avenue and Monterey Avenue.	F. A. Yearout	---	Irr	---	16	1668	515-1668	---	Yes	Yes
16S/15E-24N2	On east side of Tuolumne Avenue and 0.2 mile north of Conejo Avenue.	-------	---	Irr	---	16	---	---	---	Yes	Yes
16S/15E-25Q1	On north side of Clark Avenue and 0.5 mile east of Tuolumne Avenue.	Vista Del Llano	---	Irr	---	16	1694	409-1669	---	Yes	Yes
16S/16E-6N1	Northeast corner of intersection of Nebraska Avenue and Calaveras Avenue.	Gragnani Bros.	---	Irr	---	16	896	250-896	---	Yes	Yes
16S/16E-9N1	On north side of Mountain View Road and 0.1 mile east of Sonoma Avenue.	Rabt Bros.	---	Irr	---	14	560	300-560	---	Yes	Yes
16S/16E-20N1	Northeast corner of intereection of Conejo Avenue and Amador Avenue.	Vista Del Llano	---	Irr	---	14	531	---	---	Yes	Yes
17S/16E-18E1	On east side of Calaveras Avenue and 0.4 mile south of Cerini Avenue.	Vista Del Llano	---	Irr	---	16	1615	667-1615	---	---	Yes
17S/16E-18Q1	On north side of Harlan Avenue and 0.25 mile west of Amador Avenue.	Vista Del Llano	---	Irr	---	16	1800	340-1800	---	Yes	Yes
17S/16E-24N1	Northeast corner of intersection of Colusa Avenue and Mt. Whitney Avenue.	Hornish Bros.	---	Irr	---	16	1518	441-1518	---	---	Yes
17S/16E-28N2	On east side of Sonoma Avenue and 0.2 mile north of Laguna Avenue.	W. C. Farrell	---	Irr	---	---	---	---	---	---	Yes
17S/17E-23Q1	On north side of Mt. Whitney and 0.6 mile east of Lassen Avenue in Five Points.	H. W. Deavenport	---	Irr	224	---	589	278-589	Yes	Yes	Yes
17S/17E-27R1	Northwest corner of intersection of Lassen Avenue and Laguna Avenue.	Deavenport	---	Irr	---	16	660	300-660	---	---	Yes
18S/16E-1N1	Northeast corner of intersection of Colusa Avnue and Paige Avenue.	M. E. Willson	---	Irr	---	16	1821	620-1821	---	Yes	Yes
18S/16E-24N1	Northeast corner of intersection of Oakland and Colusa Avenue.	-------	---	Irr	---	---	---	---	---	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

WEST SIDE AREA, SAN JOAQUIN COUNTY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
18S/17E-13N1	Northeast corner of intersection of Siskiyou Avenue and Cadillac Avenue.	F. C. Diener	——	Irr	——	16	1790	500-1790	——	Yes	Yes
18S/17E-13Q1	On north side of Cadillac Avenue and 0.5 mile west of Madera Avenue.	F. C. Diener	——	Irr	——	——	1650	——	——	——	Yes
18S/17E-30P1	On north side of Packard Avenue and 0.75 mile west of Butte Avenue.	Benson	——	Irr	——	16	1995	502-1995	——	Yes	Yes
18S/17E-33N1	Northeast corner of intersection of Lake Avenue and Ford Avenue.	Calflax	——	Irr	——	16	2209	500-2209	——	Yes	Yes
19S/17E-9N1	Northeast corner of intersection of Lake Avenue and State Avenue.	O'Neill Farms	——	Irr	——	16	1930	550-1930	——	Yes	Yes
19S/17E-13N1	Northeast corner of intersection of Siskiyou Avenue and Cole Avenue.	Giffen Inc.	——	Irr	——	16	2170	606-2170	——	Yes	Yes
19S/17E-34N1	Northeast corner of intersection of Trinity Avenue and Kent Avenue.	Giffen Inc.	——	Irr	——	16	2131	602-2131	——	Yes	Yes
19S/18E-23D2	Southeast corner of intersection of Jameson Avenue and Idaho Avenue.	Boston Land Co.	——	Irr	——	16	2110	700-2030	——	Yes	Yes
19S/18E-28E1	On east side of Howard Avenue and 0.4 mile south of State Highway 198.	Boston Land Co.	——	Irr	——	16	2110	700-2010	——	Yes	Yes
19S/19E-30B2	On south side of State Highway 198 and 0.5 mile west of 27th Avenue.	H. I. Black	——	Irr	——	16	1250	600-1250	——	——	Yes
20S/15E-25D2	2.0 miles north of Jayne Avenue and 3.0 miles east of State Highway 33.	Allen	——	Irr	——	18	——	——	——	——	Yes
20S/15E-26M1	1.3 miles north of Jayne Avenue and 2.0 miles east of State Highway 33.	——	——	Irr	——	——	——	——	——	——	Yes
20S/16E-4P2	0.5 mile east of Sonoma Avenue and 0.2 mile north of Kansas Avenue.	Shell Oil Co.	——	Ind	——	——	823	——	——	Yes	Yes
20S/17E-9R1	On north side of Lansing Avenue and 0.15 mile west of Trinity Avenue.	Giffen Inc.	——	Irr	——	16	2145	600-2145	——	——	Yes
20S/17E-11N1	0.25 mile north of Lansing Avenue on Lassen Avenue, 200 feet east of Lassen Avenue.	——	——	Irr	——	——	——	——	——	Yes	Yes
20S/17E-36D1	1.0 mile north of Jayne Avenue and 1.0 mile east of Modoc Avenue.	S. & V. Thomas	——	Irr	——	18	2092	435-2092	——	——	Yes
20S/18E-24D1	On southeast corner of intersection of 24th Avenue and Lincoln Avenue.	Boston Land Co.	——	Irr	——	16	2012	600-2005	——	——	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

RAISIN CITY OIL FIELD, SAN JOAQUIN VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
15S/17E-1H1	0.5 mile south of intersection Washington and Madera Ave. on west side of Madera Avenue.	——	---	Irr	——	——	——	——	——	——	Yes
15S/17E-12J2	0.3 mile north of bridge crossing canal on Lassen Ave.	James Irrigation Dist.	——	Irr	---	——	——	——	——	——	Yes
15S/17E-11P1	0.24 mile north of section line; 0.5 mile east of canal and section line.	Signal Oil Co.	——	Dom	——	——	——	——	——	——	Yes
15S/17E-12J1	1.52 miles south of Washington Avenue and 30 feet west of Madera Avenue.	——	---	Irr	---	12	——	——	——	——	Yes
15S/17E-13G1	100 feet north of Summer Ave., 0.38 mile west of Madera Ave.	Dunlap & Graham	——	Dom Ind	——	——	——	——	——	——	Yes
15S/17E-13R1	90 ft. West of Madera Ave. south side of Seaboard Oil Co. yard, near offices.	Seaboard Oil Co.	——	Dom	——	——	180	169-180	——	——	Yes
15S/17E-14G1	0.10 mile north of Summer Avenue and 1.51 mile west of Madera Avenue.	Seaboard Oil Co.	——	Dom Ind	——	——	——	——	——	——	Yes
15S/17E-15B1	0.15 mile south of north section line and 0.30 mile west of east section line, Section 15.	Signal Oil Co.	——	Dom	——	6 & 8	200	——	——	——	Yes
15S/17E-15F1	0.4 mile south of canal bridge on Lassen Ave., 0.6 mile west of Laesen Avenue.	——	——	Irr	——	——	——	——	——	——	Yes
15S/17E-15H1	0.2 mile west of Lassen Avenue and 0.4 mile south of bridge crossing canal in Raisin City Oil Field.	——	——	Irr	——	16	——	——	——	——	Yes
15S/17E-15R1	3.7 miles north of intersection of Lassen Avenue and McMullen Grade. East side of Lassen Avenue.	James Irrigation Dist.	——	Irr	——	——	194	166-194	——	——	Yes
15S/17E-22R1	East side of Lassen Avenue, 2.7 miles north of the intersection of Lassen Avenue and McMullen Grade.	James Irrigation Dist.	——	Irr	——	——	190	82-151; 175-190	Yes	——	Yes
15S/17E-34J1	1.1 miles north of intersection of McMullen and Lassen Ave. on Lassen Ave. east side of Lassen Avenue.	——	——	Irr	——	——	——	——	——	——	Yes
15S/18E-16G1	3.6 miles northeast of intersection of McMullen Grade and Madera Avenue, 50 feet northwest of McMullen.	James Irrigation Dist.	——	Irr	——	——	267	130-221; 223-267	Yes	Yes	Yes
15S/18E-20G1	2.15 miles northeast of intersection of McMullen Grade and Madera Avenue, 50 feet northwest of McMullen.	James Irrigation Dist.	——	Irr	201	——	293	165-253; 270-293	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

DEVILS DEN OIL FIELD, SAN JOAQUIN VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
24S/18E-33M1	2 miles northwest of Barker Ranch headquarters.	Barker Ranch	---	Irr	---	14	---	---	---	Yes	Yes
24S/18E-33N1	1 mile northwest of Barker Ranch headquarters.	Barker Ranch	---	Irr	---	14	---	---	---	---	Yes
24S/18E-33Q2	---	---	---	Irr	---	---	---	---	---	---	Yes
25S/18E-2N2	1.75 mile west of junction of State Highway 33 and Lemoore Road, and 0.2 mile north.	K. K. Ranch	---	Irr	461	36	---	---	---	Yes	Yes
25S/18E-3D1	2.9 miles west of junction State Highway 33 and Lemoore Road, and 0.8 mile north.	K. K. Ranch	---	Irr	610	16	---	---	---	Yes	Yes
25S/18E-3E1	2.9 miles west of junction State Highway 33 and Lemoore Road, and 0.6 mile north.	K. K. Ranch	---	Irr	---	---	---	---	---	---	Yes
25S/18E-3M3	2.85 miles west of junction State Highway 33 and Lemoore Road, and 0.45 mile north.	K. K. Ranch	---	Irr	595	16	352	---	---	Yes	Yes
25S/18E-3N2	2.80 miles west of junction of State Highway 33 and Lemoore Road, and 0.15 mile north.	A. M. Barker	---	Ind	588	14	---	---	---	Yes	Yes
25S/19E-6D1	On east side of Lemoore Road 1.0 mile north of junction of State Highway 33 and Lemoore Road.	K. K. Ranch	---	Dom	505	14	---	---	---	Yes	Yes
25S/19E-6D2	On east side of Lemoore Road 0.8 mile north of junction of State Highway 33 and Lemoore Road.	K. K. Ranch	---	Irr	506	---	---	---	---	---	Yes
25S/19E-6N1	Behind PG&E substation at Devils Den.	K. K. Ranch	---	Irr	506	---	---	---	---	---	Yes
25S/19E-7M1	500 feet east of State Highway 33 and 0.7 mile south of junction of State Highway 33 and Lemoore Road.	K. K. Ranch	---	Irr	498	16	---	---	---	Yes	Yes
25S/19E-7P1	0.45 mile east of State Highway 33 and 1.05 miles south of junction of State Highway 33 and Lemoore Road.	K. K. Ranch	---	Irr	491	16	---	---	---	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
DEVILS DEN OIL FIELD, SAN JOAQUIN VALLEY

WELL DATA

EDISON OIL FIELD, SAN JOAQUIN VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDRA											
29S/28E-36J1	Northwest side of Southern Pacific railroad tracks (U.S. Highway 466) and 0.1 mile northwest of Weed Patch Highway.	Kern Growers Exchange	---	Dom Irr	450	---	---	-------	---	Yes	Yes
29S/29E-32L1	1.4 east of Weed Patch Highway. South of Mills Drive.	W. S. Buchner	---	Dom Irr	535	---	400	-------	---	No	Yes
30S/28E-11R2	0.1 mile north of intersection of Muller Road and Fairfax Road. 90 feet west of Fairfax Road.	Charles Samuels	---	Dom Irr	397	12	402	------	----	Yes	Yes
30S/28E-25A1	750 feet south of Whitewolf Road, 1000 feet west of Weedpatch Road.	Douglas Oil Co.	August 1951	Ind	405	16	600	252-600	Yes	Yes	Yes
30S/29E-4C1	0.3 mile west of intersection of Redbank and Malaga Road, 35 feet north of Redbank Road.	Marvin Berry	---	Irr	---	---	---	------	---	No	Yes
30S/29E-5R1	0.2 mile north of intersection of Redbank and Edison Drive Drive, 20 feet west of Edison Drive.	Bender	---	Irr Dom	---	---	505	------	---	No	Yes
30S/29E-6J1	0.5 mile south of U. S. Highway 466 and 200 feet west of Vineland Road.	Fred Delzer	1947	Irr Dom	480	14	500	------	No	No	Yes
30S/29E-7R1	0.23 mile north of Muller Road on west side of Vineland Road.	Anna Alexis	---	Irr	470	---	600	240-600	Yes	---	Yes
30S/29E-8R1	0.2 mile north of intersection of Muller Road and Edison Drive, 40 feet west of Edison Drive.	E. Loveland	---	Irr	508	14	---	------	---	Yes	Yes
30S/29E-10L1	0.35 mile north and 0.5 mile west of intersection of Muller Road and Comache Drive.	Grayson	---	Irr	600	---	---	------	---	Yes	Yes
30S/29E-11N2	200 feet east of the intersection of Muller Road and Comache Drive. 30 feet north of Muller Road.	Ed Kirschenman	---	Irr	635	---	510	-----	---	Yes	Yes
30S/29E-16H1	75 feet west of Malaga Road and 0.5 mile south of Muller Road.	Marvin Berry	---	Irr Dom	---	---	287	---	---	---	Yes
30S/29E-20A1	200 feet south of Hermosa Road and 100 feet west of Edison Drive.	Howard Porter	---	Irr	478	---	600	-----	---	---	Yes
30S/29E-22A1	Approximately 200 feet south and 40 feet west of intersection of Hermosa Road and Comache Drive.	J. Guimara	---	Irr Dom	605	---	563	---	---	---	Yes
30S/29E-22J1	0.4 mile south of Hermosa Road and 40 feet west of Comanche Drive.	---	---	Dom Irr	585	---	---	------	---	---	Yes
30S/29E-24P1	0.25 mile north of Panama Lane and 0.5 mile east of Tejon Highway.	H. L. Mettler	---	Irr	679	14	637	---	---	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

EDISON OIL FIELD, SAN JOAQUIN VALLEY (Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MUNAM											
30S/29E-25M1	0.5 mile north and 0.3 mile east of intersection of Tejon Highway and Tejon Highway and Mountain View Road, 30 feet south of Road.	M. H. Kettler and Son	----	Irr	618	---	----	----	----	No	Yes
30S/29E-27A1	0.15 mile south and 40 feet west of intersection at Panama Land and Comache Road.	----	----	Irr	----	---	---	----	---	No	Yes
30S/29E-27J1	0.5 mile south of Panama Lane on Comache Road, and 40 feet west of Comanche.	----	----	Dom Irr	507	---	366	----	---	No	Yes
30S/29E-34C1	0.5 mile west of Comanche Road on Mountain View Road. 30 feet south of Mountain View Road.	A. Kirschermann	---	Dom Irr	503	---	400	208-394	---	No	Yes
30S/29E-35A1	0.16 mile south of Mountain View Road on west side of Tejon Highway.	Kovacavitch	---	Irr	565	---	---	----	---	---	Yes
30S/29E-35C1	0.5 mile east and 0.1 mile south of the intersection of Mountain View Road and Comanche Drive.	----	---	Irr	550	---	---	----	---	Yes	Yes
30S/30E-8P1	0.4 mile southeast of intersection of Tehachapi Highway and Neumarkel Road. South side of Highway.	----	----	Irr	---	---	396	----	---	No	Yes
31S/29E-1A1	0.8 mile east of Tejon Highway on Panama Road. 60 feet south of Panama Road.	Di Giorgio Fruit Co.	-----	Irr	---	---	1070	----	---	---	Yes
31S/29E-10C1	0.5 mile east of Tejon Highway on Panama Road. 60 feet south of Panama Road.	Di Giorgio Fruit Co.	November 1944	Irr	562	18	631	275-631	---	Yes	Yes
31S/29E-10C1	0.55 mile west of Comanche Drive on Greenfield Road. South side of Road.	Di Giorgio Fruit Co.	---	Irr	---	---	560	---	---	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

LOWER MOJAVE RIVER-BARSTOW TO YERMO

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB&M											
9N/1E-1L1	Union Pacific Railroad Company, 0.1 mile south of Highway 91, southwest of Yermo.	Union Pacific Railroad Co.	---	Mun	---	16-24	325	---	No	No	Yee
9N/1E-15M1	In log shack 60 feet east of house, Cool Water Ranch 0.6 mile east of Daggett and 0.35 mile north of railroad track.	Grey Phelps Cool Water Ranch	---	Dom	---	10	---	---	No	No	Yes
9N/2E-8F1	3.0 miles northeast of Gale along Transmission Line road, thence 0.8 mile north, 0.6 mile northwest of Transmission Line, 5.0 miles east; northeast of Daggett.	Stuart C. Slack	1948	Dom Irr	---	14	300	---	No	No	Yes
9N/1W-5J1	1.6 mile east of Barstow, 0.6 mile north from Highway 66 along Riverside Drive, 200 feet northeast of Riverside Drive, Edge of southwest bank of Mojave River.	V. Sternacle	Jan. 1951	Dom	---	12	107	---	No	No	Yes
9N/1W-9G1	2.3 miles east of Barstow, 200 feet north of Highway 66, west side of Food Town Market, 0.75 mile east of Riverside Drive.	V. B. Price	May 1948	Dom	---	8	62	---	No	No	Yes
9N/1W-10D1	4 miles east of Barstow. 1.1 miles southeast from Highway 91 along Soapmine Road, 0.4 mile south of Soapmine Road on east side of road.	Bob Hetticks	Sept. 1944	Dom Irr Stk	---	12	132	---	No	No	Yes
9N/2W-1F1	0.8 mile west of Barstow, 0.3 mile north of Highway 66 (at gas station) north of railroad track, on north east side of road; well nearest road.	Southern California Water Company	Apr. 1947	Mun	---	14	174	---	No	No	Yes
10N/1W-32J1	1.5 mile northeast of Barstow, 0.6 mile west of Soapmine Road and 0.3 mile south of Highway 91.	R. W. Dickenson	1950	Dom	---	6	57	---	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

COACHELLA VALLEY-LOWER COACHELLA AREA

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBM											
5S/7E-16K1	2.65 miles northwest of Indio, 0.5 mile south of Highway 99, 300 feet west of irrigation canal.	Lester Roberson	10-31-51	Dom	---	6	225	169-225	Yes	No	Yes
5S/7E-22K1	1.5 miles west of Indio, 1.3 miles west of intersection Jackson Avenue and highway 99, 240 feet south.	Z. E. Zalay	8-30-50	Dom	---	6	200	144-200	Yes	No	Yes
5S/7E-33C1	2.5 miles west of Indio, 0.27 mile south and 5.01 miles west of intersection of Madison Avenue and Avenue 48.	J. N. Rameriz	----	Dom Irr	---	10	339	144-338	Yes	No	Yes
5S/8E-31D1	0.15 mile south and 0.01 mile east of Van Buren Avenue and highway 60.	Mitchel Land and Improvement Co.	8-12-50	Dom	---	6	300	156-300	Yes	No	Yes
5S/8E-33M1	3 miles southeast of Indio, 1.1 mile east of Highway 111 and 264 feet north of Avenue 50.	E. M. Holm	3-19-51	Dom	---	6	148	108-148	Yes	No	Yes
6S/7E-25E1	0.27 mile south and 0.5 mile east of intersection of Jackson Avenue and Avenue 58.	G. Phillips	2-14-51	Dom	---	8	300	138-178; 242-300	Yes	No	Yes
6S/8E-7P1	0.03 mile north and 0.4 mile east of intersection of Van Buren Avenue and Avenue 54.	M. R. Shepard	7-7-50	Dom Irr	---	6	150	130-150	Yes	No	Yes
6S/8E-27H1	0.7 mile north and 0.99 mile east of intersection of Polk and Avenue 60.	J. E. Stroube	6-26-51	Dom	---	6	700	412-552; 640-700	Yes	No	Yes
6S/9E-30C1	0.5 mile east and 0.01 mile south of intersection of Buchanon Strset and 58th Avenue.	N. Karahadian	7-21-50	Dom Irr	---	6	527	300-420	Yes	No	Yes
7S/8E-22M1	0.27 mile north and 0.02 mile east of intersection of Polk Street and Highway 99.	Vessey Brothers	12-15-50	Dom	---	6	348	216-348	Yes	No	Yes
7S/9E-16K1	0.74 mile east and 0.01 mile south of intersection of National Avenue and Johnson Street.	C. C. Crockett	10-20-52	Dom	---	8	685	245-685	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

EAST COASTAL PLAIN-PIEDMONT AREA

WELL DATA

EAST COASTAL PLAIN-PRESSURE AREA

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBM											
5S/11W-21M3	50 feet east of Bolsa Chica Street and 0.39 mile north of Wintersburg Avenue.	Mrs. Olive Mason	1935	Dom	18	—	—	203-213; 225-228	Yes	No	Yes
5S/11W-21N3	270 feet north of Wintersburg and 300 feet east of Balsa Chica.	Anderson Mutual Water Co.	—	Mun	—	—	—	—	No	—	Yes
5S/11W-25R2	150 feet west of Cannery Street and 0.24 mile north of Talbert Avenue.	Harry C. Fulton	Prior to 1914	Dom	—	7	145	—	No	No	Yes
5S/11W-26F4	200 yards north of Slater Avenue and 100 feet west of Gothard Street.	Oscar Stricklin	1944	Dom Irr	—	6	162	142-162	No	No	Yes
5S/11W-26M1	0.17 mile south of Slater Avenue and 300 feet east of Golden West Street.	Southern California Water Co.	Feb.1931	Mun	—	—	282	60-85; 175-180	Yes	No	Yes
5S/11W-27H4	500 feet north of Slater and 125 feet west of Golden West	W. S. Tubach	3-10-31	Dom	6	4	91	—	Yes	—	Yes
5S/11W-29C1	50 feet north of Los Patos Avenue and 150 feet west of Algonquin Street, easterly of two wells.	Sunset Land & Water Co.	—	Mun	62	6	641	333-357; 384-416	Yes	No	Yes
5S/11W-36B2	0.58 mile east of Huntington Beach Blvd. and 60 feet south of Talbert Avenue.	Joseph J. Courreges	1921	Dom	—	—	138	—	Yes	No	Yes
5S/11W-36P1	0.4 mile east of Huntington Beach Blvd. and 0.07 mile north of Garfield Avenue.	Ivan Harper	Aug. 1930	Dom Irr	57	—	148	—	Yes	No	Yes
5S/12W-12C1	0.45 mile southwest along Westminister Avenue from Los Alamitos Blvd., 750 feet west of Westminister Avenue.	I. W. Hellman Ranch	—	Dom Stk Irr	13	12	705	417-473	Yes	No	Yes
6S/10W-6L2	200 feet west of Bushard Street and 0.5 mile south of Garfield Avenue.	H. J. Lamb	Prior to 1919	Dom	12	7	150	—	No	No	Yes
6S/10W-7G1	250 feet east of Bushard Street and 0.21 mile north of Indianapolis, tap 50± north of well.	Alban Holtz	—	Dom	—	—	112	—	No	No	Yes
6S/10W-7J1	650 feet south of Indianapolis, 300 feet west of Bushard Avenue.	Farnsworth Bros.	—	Dom	8.76	6	150	—	No	No	Yes
6S/10W-8D9	429 feet south of the center line of Adams Street, 80 feet east of the center line of Wright Street.	City of Newport Beach	July 1947	Mun	11	16	130	78-116	Yes	—	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

EAST COASTAL PLAIN PRESSURE AREA(Continued)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBxV											
6S/11W-3R2	0.30 mile due south of Mansion, 300 feet west of Golden West extension.	Huntington Beach Golf Course	1950	Irr Dom	—	8	279	—	—	—	Yes
6S/11W-12F3	500 feet north of Indianapolis and 0.52 mile east of Huntington Beach Blvd.	F. E. Farnsworth	1924	Stk Irr	12	10	161	—	Yes	—	Yes
6S/11W-12Q1	0.23 mile north of Atlanta and 0.62 mile east of Huntington Beach Blvd.	Surfland Oil Co.		Dom	5		155	129-150	Yes	—	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

CHINO BASIN

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SFBAM											
1S/5W-7N1	100 feet south and 75 feet west of intersection of Atcheson Topeka and Santa Fe Railroad and Oleander Avenue, Fontana	Fontana Union Water Co.	1931	Dom Irr	——	——	812	424-660; 680-782	No	No	Yes
1S/6W-29R1	200 feet west of Etiwanda Avenue and 0.75 mile north of Marley Avenue.	S. & S. Ranch	——	Irr Dom	——	——	——	——	No	No	Yes
1S/7W-25R1	400 feet south of intersection Highway 60 and Corona Avenue 50 feet east of Corona (Baker) Avenue.	Peach Park Water Co.	3-27-28	Irr Dom	——	16	351	——	Yes	No	Yes
1S/7W-34M1	125 feet east of Vineyard Avenue and 100 feet south of Francis Avenue.	Wilder & Camel	Prior to 1929	Irr Dom	——	10	326.5	——	No	No	Yes
2S/7W-10N1	90 feet south of Chino Avenue and 0.12 mile east of Vineyard Avenue, East of Chino.	P. J. Crevalin	——	Dom Irr	——	——	375	——	No	No	Yes
2S/7W-15A1	0.55 mile south of Chino Avenue and 0.2 mile west of Archibald Avenue, north well of 2 wells; east of Chino.	Pietro Enrico Domenico Enrico	Feb. 1930	Dom	——	8	436	——	Yes	No	Yes
2S/7W-21L1	40 feet west of Walker Avenue and 350 feet south of Merril Avenue, 0.50 mile east of Grove Avenue.	C. T. Merrill	——	Dom Irr	657	14	207	——	Yes	No	Yes
2S/7W-23E1	120 east of Archibald Avenue and 1267 feet north of Merrill Avenue.	A. Omlin	——	Dom	——	7	104	——	No	No	Yes
2S/7W-27A1	230 feet west of Archibald Avenue and 10 feet south of Cloverdale Road extended; westerly well of 2 wells northwest of Norco.	Luginbill and Imbach	——	Dom	642	——	310	——	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

BUNKER HILL BASIN

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M											
1N/4W-29E1	123 feet south of center-line of Darby Street and 27 feet east of center-line of California Street.	Delman Water Co.	---	Dom	---	16	429	---	No	No	Yes
1N/4W-29E3	0.5 mile north of Highland Avenue and 100 feet east of California Street, 100 feet south, southeast of well No. 1N/4W-29E1.	Delman Water Co.	1942	Dom	---	16	400	230-330	No	No	Yes
1N/4W-29F1	500 feet southwest of Cajon Blvd.; 2800 feet north of Highland Avenue, 2000 feet east of California Street.	Delman Water Co.	3-8-56	Mun	---	16	451	240-340; 418-443	Yes	---	Yes
1N/4W-29L1	1,599 feet north of center-line of Highland Avenue and 752 feet west of center-line of Muscott Avenue.	C. W. Knight	1933	Irr Dom	1249	12	603	---	Yes	No	Yes
1N/5W-23A2	0.37 mile west of Gary Street; approximately 200 feet north of Second Avenue produced; 0.16 mile north of well 23H1.	Muscoy Mutual Water Co.	---	Mun	---	---	---	---	No	---	Yes
1S/3W-8M1	Norton Air Force Base, 600 feet south of main runway, 300 feet east of section line. 300 feet south of where runway crosses the 1140 ft. contour.	Norton Air Force Base	---	Mil	---	12	150	78-148	---	---	Yes
1S/3W-9E2	400 feet east of Alabama Street and 175 feet north of road into rock company which is about 1700 feet south of Third Street.	Tri-City Rock Co.	Fall 1954	Ind Dom	---	14	400	---	---	---	Yes
1S/3W-16A1	Southeast of San Bernardino, 30 feet west of and 30 feet north of the north end of Texas Street at the Santa Ana River.	Cook Orchards	Deepened in 1954	Irr	---	20	200±	---	---	---	Yes
1S/4W-13F2	500 south of Central 1000 feet east of Tippicanoe;	Gage Canal Co.	1931	Irr	1059	24	422	100-402	---	---	Yes
1S/4W-13F3	1400 feet east of Tippicanoe, 150 feet north of Central Ave.	Mesbur Realty Co.	1926	Dom	1060	12	123	102-120	---	---	Yes
1S/4W-13G1	2500 feet east of Tippicanoe, 100 feet south of Central Ave. projected.	Gage Canal Co.	1946	Irr	1063	24	350	---	---	---	Yes
1S/4W-13L1	At caretaker's house, near upper end of Gage Canal, 10 feet south of canal, 1000 feet east of Tippicanoe, 1300 feet north of San Bernardino Ave.	Gage Canal Co.	1890	Dom	---	10	300	---	---	---	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

SAN LUIS REY VALLEY COASTAL AREA

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB&M											
11S/4W-4N1	1.55 miles north from Mission San Luis Rey along Camp Pendleton Road and 200 feet south of Camp Pendleton Road on east side of dirt road.	George Nagata	8-19-52	Irr Dom	---	14	131	104-131	Yes	No	Yes
11S/4W-8 J1	54 feet north of Highway 76 and 51 feet east of road to Academy of the Little Flower.	Academy of the Little Flower	Aug. 1951	Dom	---	16	227	---	Yes	No	Yes
11S/4W-8N1	1300 feet southwest of intersection of Highway 76 with Camp Pendleton Road and 87 south of Highway 76.	Clarence Nishizu	Mar. 1950	Dom Irr	---	16	180	---	No	No	Yes
11S/4W-18C1	2900 feet northeast along #79 from pumping plant; 1760 feet northwest along private road, 15 feet southwest of road.	S. Davies	1937 ±	Irr Dom	---	14	134	---	---	Yes	Yes
11S/4W-18 L4	50 feet south of Highway 76 and 160 feet east of Reservoir (W. Yard)	Carlsbad Mutual Water Co.	1951	Mun	---	16	204	---	No	No	Yes
11S/5W-13L1	400 feet south of San Luis Rey River and 2,100 feet northwest of Highway 76.	Amsler	---	Dom Irr	---	---	---	---	No	No	Yes
11S/5W-14Q1											
11S/5W-23E1	In San Luis Rey River channel 250 feet north of mouth of Lawrence Canyon.	Walter Johnson	1948	Ind	---	14	110	---	No	No	Yes

WELL DATA

EL CAJON VALLEY

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M											
15S/1E-31R1	220 feet east of Highway 80 and 0.16 mile north of Flume Drive, northeast of El Cajon.	E. Loewer	1948	Dom Irr	—	8	112	—	No	No	Yes
15S/1W-27G1	150 feet west of Magnolia Avenue and 0.19 mile northwest of Mission Avenue, Santee.	Edgemoor Farm	5-4-50	Dom	—	12	105	—	No	No	Yes
15S/1W-34R3	150 feet west of Magnolia Avenue and 0.32 mile north of First Avenue, north of El Cajon.	G. G. Snyder	Aug. 1949	Dom	—	36	54	—	No	No	Yes
16S/1W-1H4	0.10 mile east of Bostania Street and 0.22 mile north of Broadway, Bostania.	Rhodea	1946	Dom	—	36	106	—	No	No	Yes
16S/1W-2K6	250 feet south of Broadway and 0.28 mile west of First Avenue, north of El Cajon.	J. W. Pickett	1920	Dom	—	72	50	—	No	No	Yes
16S/1W-3E1	200 feet west of Cuyamaca Street and 0.38 mile north of Broadway.	Ed. Fletcher Co.	1952	Dom* Irr	—	8	847	—	No	No	Yes
16S/1W-3K3	45 feet north of Broadway and 0.46 mile west of Magnolia Avenue, north of El Cajon.	Russell Kendall	Apr. 1946	Dom Irr	—	60	228	—	No	No	Yes
16S/1W-3N1	0.81 mile north of Main Street and 300 feet east of Pierce Street, west of El Cajon.	Ed. Fletcher Co.	May 1951	Dom*	—	8	532	—	Yes	No	Yes
16S/1W-3Q1	950 feet east of Johnson Avenue and 0.29 mile south of Broadway, west of El Cajon.	E. S. Clark	1915	Dom Irr	—	72	101	—	No	No	Yes
16S/1W-10A2	190 feet west of Magnolia Avenue and 0.44 mile south of Broadway, north of El Cajon.	Guy Edis	1946	Dom	—	30	80	—	No	No	Yes
16S/1W-10D1	0.38 mile north of Main Street and 300 feet east of Pierce Street, west of El Cajon.	Ed Fletcher Co.	1946	Dom*	—	8.62	521	—	Yes	No	Yes
16S/1W-10E	120 feet north of Main Street. 0.40 mile west of Johnson Avenue, west of El Cajon.	Ed Fletcher Co.	2-9-46	Dom*	—	8.62	521	—	Yes	No	Yes
16S/1W-11P4	50 feet north of Camden Avenue, 141 feet east of Taft Avenue; El Cajon.	J. M. Conaway	1949	Irr	—	24	50	—	No	No	Yes
16S/1W-12J4	120 feet north of Lexington Avenue 0.13 mile west of Third Street.	Maxon	—	Dom	—	42	72	—	No	No	Yes
16S/1W-15K3	30 feet south of Chase Avenue 0.29 mile west of Magnolia Avenue.	A. W. McDonough	1946	Dom**	—	72	35	—	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)
* Subdivision

WELL DATA
SAN DIEGO VALLEY BASIN

WELL DATA

TIA JUANA VALLEY BASIN

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBM											
18S/2W-32H1	0.25 mile south of Sunset and 0.12 mile east of 15th Street extended.	Holderness	—	Test	—	10	28	—	No	No	Yes
18S/2W-32P2	0.04 mile south of Sunset and 2.1 mile west of 19th Street.	California Water & Telephone Co. (formerly Joe Lewis)	—	Test	—	12-3	37	—	No	No	Yes
18S/2W-32P4	0.03 mile east of west end of Sunset Ave. (Banana)	California Water & Telephone Co.	—	Test	—	8	100	85-100	No	No	Yes
18S/2W-33N4	81 feet east and 25 feet north of intersection of Sunset and 19th Street.	Jackson	—	Irr	—	12	—	—	No	No	Yes
18S/2W-35J1	Northeast corner intersection of Gate 2 (Dairy Mart) Road and U. S. Highway 101.	Henry Schaffner	—	Irr	—	—	—	—	No	No	Yes
19S/2W-1E4	0.5 mile south of San Ysidro, 0.44 mile north of International boundary and 0.84 mile east of Gate 2(Dairy Mart) road.	San Ysidro Irrigation District	1937	Mun	46	10	50	30-50	Yes	No	Yes
19S/2W-2E1	West side Gate 2 (Dairy Mart) Road and 0.35 mile south of Tia Juana River.	—	—	Irr	—	—	—	—	No	No	Yes
19S/2W-3A1	0.25 mile west of Gate 2 (Dairy Mart) Road and 0.25 mile south of Tia Juana River.	Aballo and Wright	—	Irr	—	12	—	—	No	No	Yes
19S/2W-4A5	720 feet west of National Avenue and 0.32 mile south of Sunset (Banana).	California Water & Telephone Co.	—	—	—	12	87	—	No	No	Yes
19S/2W-5C6	0.5 mile south of Sunset (Banana) and 1.22 mile west of 19th Street.	California Water & Telephone Co.	—	Test	—	8	100	—	No	No	Yes
19S/2W-5G1	0.38 mile south of Sunset (Banana) and 0.75 mile west of 19th. Street	Knox Dairy Farm	—	Irr	—	—	—	—	No	No	Yes
19S/2W-5L2	15 feet north of Monument Road on the eastern boundary of Border Field (extended northerly)	California Water & Telephone Co.	—	Test	6.5	10	95	—	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

APPENDIX B

MINERAL ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	HBB&M					SMITH RIVER PLAIN, CRESCENT CITY AREA																
Arlet Short Domestic well	16N/1W-2Q1	11-29-56	53	239	7.2	15 0.75	14 1.13	16 0.70	0.3 0.01	0 0.00	138 2.26	0.0 0.00	11 0.31	5.2 0.08	0.1 0.01	0.15	39	169	27	94	0	USGS
L. L. Bond Domestic well	16N/1W-15C1	12-4-56	50	129	6.6	4.4 0.22	6.8 0.56	9.2 0.40	0.5 0.01	0 0.00	39 0.64	0.0 0.00	9.0 0.25	19 0.31	0.1 0.01	0.0	17	85	34	39	7	USGS
Pine Grove School Domestic well	16N/1W-17A2	12-4-56	52	182	6.8	8.0 0.40	13 1.04	11 0.48	0.3 0.01	0 0.00	88 1.44	1.0 0.02	16 0.45	1.8 0.03	0.1 0.01	0.0	29	123	26	72	0	USGS
Pioneer Lumber Co. Domestic well	16N/1W-18F1	12-4-56	52	292	6.9	6.8 0.34	19 1.60	24 1.04	0.2 0.01	0 0.00	116 1.90	1.9 0.04	38 1.07	0.1 0.00	0.0 0.00	0.08	25	172	35	97	2	USGS
Albert Fuller Domestic well	16N/1W-20A2	12-4-56	52	159	6.5	3.6 0.18	6.8 0.56	16 0.70	0.4 0.01	0 0.00	45 0.74	4.8 0.10	12 0.34	19 0.31	0.0 0.00	0.0	23	108	48	37	0	USGS
J. E. Patterson Domestic well	16N/1W-20B1	12-4-56	52	195	6.9	4.8 0.24	11 0.88	17 0.74	0.4 0.01	0 0.00	72 1.18	5.8 0.12	12 0.34	14 0.23	0.0 0.00	0.0	27	127	40	56	0	USGS
Walter Storey Domestic well	16N/1W-20H1	12-4-56	51	181	6.7	4.8 0.24	11 0.83	13 0.57	0.5 0.01	0 0.00	58 0.95	3.8 0.08	16 0.45	18 0.29	0.0 0.00	0.01	19	115	34	56	8	USGS
Crescent City Water Co. Municipal well	16N/1W-20Q1	12-4-56	49	239	6.7	8.4 0.42	12 1.00	18 0.78	0.7 0.02	0 0.00	63 1.03	6.7 0.14	30 0.85	18 0.29	0.0 0.00	0.0	20	145	35	71	19	USGS
Del Norte County Infirmary Domestic well	16N/1W-21M1	12-4-56	51	178	6.6	5.6 0.28	11 0.92	13 0.57	0.3 0.01	0 0.00	78 1.28	1.0 0.02	16 0.45	1.1 0.02	0.0 0.00	0.02	22	108	32	60	0	USGS
Evo Bellow Irrigation well	17N/1W-2G1	11-29-56	52	95.9	6.8	4.4 0.22	7.1 0.58	5.4 0.23	0.1 0.00	0 0.00	44 0.72	1.9 0.04	7.0 0.20	3.1 0.05	0.0 0.00	0.05	19	70	22	40	4	USGS
A. H. Emmerson Irrigation well	17N/1W-9A1	11-29-56	55	244	7.3	5.6 0.28	28 2.28	4.2 0.18	0.3 0.01	0 0.00	151 2.47	1.9 0.04	7.0 0.20	2.1 0.03	0.0 0.00	0.01	36	159	7	128	4	USGS
Paul E. Johnson Irrigation well	17N/1W-15E1	11-29-56	52	145	6.8	3.2 0.16	13 1.10	5.8 0.25	0.4 0.01	0 0.00	69 1.13	1.9 0.04	8.0 0.23	4.6 0.07	0.0 0.00	0.04	23	94	16	63	6	USGS
H. W. Struebing Domestic well	18N/1W-5G1	11-29-56	54	168	6.5	7.6 0.38	7.1 0.58	14 0.61	0.4 0.01	0 0.00	33 0.54	3.8 0.08	27 0.76	12 0.19	0.0 0.00	0.04	10	98	39	48	21	USGS
M. J. Sierra Industrial well	18N/1W-17R1	11-29-56	54	215	7.0	11 0.55	13 1.07	14 0.61	0.2 0.01	0 0.00	114 1.87	0.0 0.00	16 0.45	0.1 0.00	0.0 0.00	0.12	33	143	27	81	0	USGS
Arnold Samuelsen Irrigation well	18N/1W-26D1	11-28-56	54	66.3	6.4	2.8 0.14	3.2 0.26	6.8 0.30	0.2 0.01	0 0.00	24 0.39	1.0 0.02	6.5 0.18	6.5 0.10	0.0 0.00	0.07	14	53	42	20	0	USGS
L. L. Borough Irrigation well	18N/1W-35B1	11-28-56	54	68.5	7.0	4.4 0.22	2.4 0.20	5.9 0.26	0.2 0.01	0 0.00	27 0.44	1.9 0.04	6.0 0.17	2.0 0.03	0.0 0.00	0.05	14	50	38	21	0	USGS

a Determined by addition of constituents

b Gravimetric determination

c Analyses by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	HDB&M							UTAH VALLEY														
Gilley Domestic well	14N/12W-5K1	12-18-56	55	606	7.7	68 / 3.39	22 / 1.77	38 / 1.65	1.8 / 0.05	0 / 0.00	245 / 5.65	43 / 0.90	7.0 / 0.20	0.3 / 0.01	0.1 / 0.01	0.72	20	371	24	258	0	USGS
Louie Johnson Domestic well	14N/12W-11N1	12-18-56	58	257	6.8	18 / 0.90	18 / 1.44	8.2 / 0.36	1.4 / 0.04	0 / 0.00	128 / 2.10	19 / 0.40	6.0 / 0.17	5.2 / 0.08	0.1 / 0.01	0.02	20	159	13	117	12	USGS
Marcus Mehtonen Domestic well	14N/12W-26K1	12-18-56	52	336	7.1	23 / 1.15	21 / 1.73	18 / 0.78	0.3 / 0.01	0 / 0.00	190 / 3.11	1.9 / 0.04	18 / 0.51	0.1 / 0.00	0.2 / 0.01	2.3	29	208	21	144	0	USGS
Mayfield Domestic well	15N/12W-6D1	12-18-56	48	152	6.5	10 / 0.50	7.8 / 0.64	8.9 / 0.39	0.5 / 0.01	0 / 0.00	69 / 1.13	7.7 / 0.16	4.0 / 0.11	2.9 / 0.05	0.0 / 0.00	0.0	21	111	25	57	0	USGS
D. Broggi Ranch Irrigation well	15N/12W-35D1	12-18-56	52	430	7.1	39 / 1.95	15 / 1.27	31 / 1.35	0.5 / 0.01	0 / 0.00	234 / 3.84	0.0 / 0.00	27 / 0.76	0.5 / 0.01	0.1 / 0.01	0.12	33	261	29	161	0	USGS
Frank Brown Domestic well	16N/12W-5D1	12-17-56		357	7.2	26 / 1.30	18 / 1.52	23 / 1.00	0.5 / 0.01	0 / 0.00	191 / 3.13	1.0 / 0.02	24 / 0.68	0.1 / 0.00	0.1 / 0.01	0.0	30	217	26	141	0	USGS
P. G.& E. Industrial and Domestic well	16N/12W-9Q1	12-17-56		387	7.1	26 / 1.30	18 / 1.48	33 / 1.44	0.8 / 0.02	0 / 0.00	239 / 3.92	9.6 / 0.20	8.3 / 0.23	0.2 / 0.00	0.2 / 0.01	0.02	30	244	34	139	0	USGS
Ralph Aguilar Domestic well	16N/12W-22H1	12-17-56		222	6.8	13 / 0.65	12 / 0.99	12 / 0.52	0.7 / 0.02	0 / 0.00	73 / 1.20	3.8 / 0.08	12 / 0.34	40 / 0.65	0.0 / 0.00	0.0	22	152	24	82	22	USGS
Norman Reece Domestic well	16N/13W-1J1	12-17-56	54	423	7.0	27 / 1.35	9.4 / 0.77	72 / 3.13	0.4 / 0.01	0 / 0.00	287 / 4.70	15 / 0.31	9.7 / 0.27	0.0 / 0.00	0.1 / 0.01	0.17	18	293	60	106	0	USGS
J. Nelson Domestic well	17N/12W-18A1	12-17-56		1910	7.4	40 / 2.00	7.3 / 0.60	338 / 14.70	1.9 / 0.05	0 / 0.00	220 / 3.61	1.9 / 0.04	525 / 14.81	0.5 / 0.01	0.6 / 0.03	73	20	1120	85	130	0	USGS
Harry Mathews Domestic well	17N/12W-28N1	12-17-56		197	6.5	16 / 0.80	9.2 / 0.76	9.5 / 0.41	0.3 / 0.01	0 / 0.01	81 / 1.33	11 / 0.23	7.0 / 0.20	15 / 0.24	0.0 / 0.00	0.0	30	138	21	78	12	USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U. S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million											Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	NC ppm	
	MDB&M					SANTA CLARA VALLEY															
A. De Mercantonio Domestic well	12N/11W-2F1	12-18-56	61	362	7.2	39 / 1.95	19 / 1.57	12 / 0.52	1.3 / 0.03	0 / 0.00	216 / 3.54	16 / 0.33	5.1 / 0.14	0.5 / 0.01	0.0 / 0.00	0.25	16	215	13	176	0	USGS
E. E. Haun Irrigation well	13N/12W-7D1	12-18-56	52	412	7.5	28 / 1.40	34 / 2.76	9.0 / 0.39	0.5 / 0.01	0 / 0.00	253 / 4.15	5.8 / 0.12	7.7 / 0.22	1.5 / 0.02	0.1 / 0.01	0.22	19	231	9	208	1	USGS
A. Damiano Irrigation well	13N/11W-18B1	12-18-56	62	276	7.4	24 / 1.20	12 / 1.02	17 / 0.74	1.1 / 0.03	0 / 0.00	167 / 2.74	1.0 / 0.02	6.8 / 0.19	0.5 / 0.01	0.1 / 0.01	2.4	13	160	25	111	0	USGS
J. H. Pomroy & Co. Irrigation well	13N/11W-18D1	12-18-56	54	538	7.5	27 / 1.35	50 / 4.09	17 / 0.74	0.6 / 0.02	0 / 0.00	327 / 5.36	21 / 0.44	10 / 0.28	2.7 / 0.04	0.1 / 0.01	1.4	26	317	12	272	4	USGS
Hopland Public Utility District Municipal well	13N/11W-19N1	12-18-56	60	335	7.0	29 / 1.45	22 / 1.81	8.6 / 0.37	0.5 / 0.01	0 / 0.00	173 / 2.84	25 / 0.52	8.1 / 0.23	1.7 / 0.03	0.0 / 0.00	0.25	19	199	10	163	21	USGS
Grace Ranch Domestic and Irrigation	13N/11W-30H1	12-18-56	60	317	7.0	27 / 1.35	21 / 1.75	9.5 / 0.41	0.7 / 0.02	0 / 0.00	182 / 2.98	14 / 0.29	6.8 / 0.19	2.0 / 0.03	0.1 / 0.01	0.47	21	193	12	155	6	USGS

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	MDB&M					EAST BAY AREA OF SANTA CLARA VALLEY																
A. Ratto Irrigation well	2S/3W-28G1	6-8-55	65	637				79 / 3.44					44 / 1.24							158		USGS
		10-19-55		698				79 / 3.43					47 / 1.32							177		DWR
		4-6-56		564				85 / 3.67					47 / 1.33			0.44				119		DWR
R. A. Zobal Domestic well	2S/3W-34A2	6-8-55	66	974	7.6	100 / 4.99	39 / 3.19	54 / 2.35	0.5 / 0.01	0 / 0.00	360 / 5.90		48 / 1.35			0.30			22	409	114	USGS
		11-16-55		864				47 / 2.05					44 / 1.24							367		DWR
		4-6-56		884				47 / 2.05					47 / 1.33			0.32				388		DWR
M. Bettencourt Domestic and irrigation well	3S/2W-31B3	6-8-55	61.5	763				98 / 4.26					50 / 1.41							182		USGS
		10-24-55		758				101 / 4.41					51 / 1.44							180		DWR
		4-6-56		657				92 / 4.0					47 / 1.33			0.48				140		DWR
Mount Eden Nursery Co Domestic and Irrigation well	3S/2W-32D2	12-22-55		1720				343 / 14.93					110 / 3.10							118		DWR
		6-8-55	64.5	1520	8.2	122 / 6.09	43 / 3.55	172 / 7.48	0.6 / 0.02	0 / 0.00	497 / 8.15		123 / 3.47			0.94			44	482	74	USGS
		4-6-56		1161				230 / 10.0					74 / 2.08			0.62				119		DWR
Cianelli Irrigation well	3S/3W-13B2	10-20-55		2330				228 / 9.90					337 / 9.49							737		DWR
		4-6-56		1899				219 / 9.54					305 / 8.6			1.1				485		DWR
Domestic and Irrigation well	3S/3W-24H1	6-8-55	64.5	753	8.4	51 / 2.54	17 / 1.40	92 / 4.00	2.6 / 0.07	8 / 0.27	300 / 4.92		62 / 1.75			0.45			50	197	0	USGS
		11-6-55		755				77 / 3.37					63 / 1.78							182		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or [illegible]

ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDR&M					EAST BAY AREA OF SANTA CLARA VALLEY(Continued)																
Domestic and Irrigation well	3S/3W-24H1	4-6-56		711				114 4.96					75 2.12			0.56				114		DWR
J. Horat Domestic and Stock well	3S/3W-24Q2	6-8-55	62	1630	7.7	128 6.39	46 3.77	164 7.13	0.6 0.02	0 0.00	555 9.10		229 6.46			0.51			40	508	53	USGS
		4-6-56		1459				171 7.44					242 6.82							388		DWR
J. C. Shinn Industrial well	4S/1W-21M1	6-21-56		726	7.7	70 3.49	34 2.77	41 1.78	2.0 0.05	0 0.00	305 5.00	72 1.50	47 1.33	1.8 0.03	0.3 0.02	0.53	20	439	22	313	62	USGS
Alameda County Water District Municipal well	4S/1W-21P1	6-21-56		791	7.7	75 3.74	37 3.02	48 2.09	2.1 0.05	0 0.00	334 5.47	78 1.62	52 1.47	4.8 0.08	0.3 0.02	0.65	20	483	23	338	64	USGS
Joseph Thomas Domestic well and Irrigation	4S/1W-29Q1	6-9-55	72	3830				99 4.30					1120 31.59							1680		USGS
		11-16-55		5070				116 5.05					1550 43.66							2318		DWR
		6-20-56		2955				86 3.75					769 21.7			0.33				1290		DWR
Joseph Thomas Domestic well	4S/1W-29J1	6-9-55	67.5	4080				133 5.78					1230 34.69							1740		USGS
Silva Irrigation well and Domestic	4S/1W-30C3	6-10-55	59	1050				42 1.83					157 4.43							476		USGS
		10-17-55		1430				45 1.94					261 7.35							640		DWR
		6-19-56		3580				92 4.0					1046 29.5			0.29				1555		DWR
Braga Domestic and Irrigation well	4S/1W-30E2	6-10-55	64	2740	8.0	290 14.47	105 8.63	82 3.57	3.4 0.09	0 0.00	236 3.87		750 21.15			0.30			13	1160	966	USGS
George Silva Irrigation well	4S/1W-30K3	6-9-55	63.5	4430				99 4.30					1320 37.23							1980		USGS

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC. ppm	Analyzed by c
	MDB&M					EAST BAY AREA OF SANTA CLARA VALLEY (Continued)																
Joe Massola Irrigation well	4S/1W-30Q3	6-9-55	68	755				34 / 1.48					80 / 2.26							312		USGS
		6-20-56		543				39 / 1.71					24 / 0.67			0.40				162		DWR
John D. Lewis Domestic and Irrigation well	4S/1W-30R2	6-9-55	63.5	739	8.4	84 / 4.19	24 / 1.97	36 / 1.57	2.0 / 0.05	3 / 0.10	263 / 4.31		75 / 2.12			0.17			20	308	87	USGS
		11-16-55		734				34 / 1.48					69 / 1.94							304		DWR
		6-20-56		685				32 / 1.38					66 / 1.86			0.43				275		DWR
H. M. Lewis Irrigation well	4S/1W-31B1	11-16-55		734				36 / 1.57					71 / 2.00							303		DWR
Silva Irrigation well	4S/1W-31F1	6-9-55	64	1350	7.8	164 / 8.18	32 / 2.67	54 / 2.35	3.7 / 0.09	0 / 0.00	254 / 4.16		274 / 2.73			0.24				543	335	USGS
J. S. Calperia Irrigation well	4S/1W-31G2	6-9-55	71.5	4410				117 / 5.09					1380 / 38.92							1930		USGS
		11-16-55		4240				102 / 4.43					1320 / 37.13							1885		DWR
		6-20-56		5540				138 / 6.0					1759 / 49.6			0.46				2490		DWR
J. Pianetta Irrigation well	4S/1W-33E1	6-22-56		1030				55 / 2.38					166 / 4.69			0.69				389		DWR
Sodini Domestic and Irrigation well	4S/1W-33G3	6-9-55	66	1540	7.6	144 / 7.19	60 / 4.93	120 / 5.22	3.2 / 0.08	0 / 0.00	680 / 11.14		120 / 3.38			1.1			30	606	48	USGS
		11-16-55		1670				112 / 4.88					139 / 3.92							678		DWR
Ben Tafar Domestic and Irrigation well	4S/1W-33K1	6-9-55	60	1660	7.8	162 / 8.08	65 / 5.32	128 / 5.57	3.2 / 0.08	0 / 0.00	757 / 12.41		118 / 3.33			1.1			29	670	49	USGS
		10-27-55		1645				109 / 4.73					113 / 3.18							705		DWR
		6-20-56		1598				122 / 5.31					107 / 3.03			1.05				645		DWR
J. F. Bettencourt Irrigation well	4S/2W-9P2	10-18-55		1925				143 / 6.23					464 / 13.07							614		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U. S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDR&M					EAST BAY AREA OF SANTA CLARA VALLEY(Continued)																
J. I. Comes Domestic and Irrigation well	4S/2W-10B1	6-8-55	72	578	8.4	37 / 1.85	13 / 1.11	74 / 3.22	3.9 / 0.10	6 / 0.20	283 / 4.64		20 / 0.56			0.39			51	148	0	USGS
		10-24-55		564				73 / 3.19					20 / 0.56							150		DWR
		6-19-56		562				70 / 3.04					20 / 0.56			0.24				156		DWR
J. A. Rose Domestic and Irrigation well	4S/2W-15D1	6-8-55	60.5	555	8.2	62 / 3.09	14 / 1.19	38 / 1.65	1.9 / 0.05	0 / 0.00	264 / 4.33		23 / 0.65			0.28			28	214	0	USGS
		11-16-55		517				37 / 1.62					18 / 0.51							197		DWR
		6-19-56		542				36 / 1.56					21 / 0.59			0.27				215		DWR
Charles Cook Domestic and Irrigation well	5S/1W-4R1	6-9-55	66.5	3910				214 / 9.31					1150 / 32.43							1480		USGS
		11-16-55		4280				218 / 9.49					1250 / 35.21							1669		DWR
		6-19-56		4121				207 / 9.0					1195 / 33.7			0.62				1555		DWR
W. E. Brinker Domestic and Irrigation well	5S/1W-8J1	6-9-55	68	650	8.4	51 / 2.54	16 / 1.29	72 / 3.13	3.8 / 0.10	6 / 0.20	302 / 4.95		34 / 0.96			0.11			44	191	0	USGS
		10-26-55		645				71 / 3.10					35 / 0.99							190		DWR
		6-19-56		642				69 / 3.02					39 / 1.10			0.17				192		DWR
Domestic and Irrigation well	5S/1W-16M1	10-26-55		582				82 / 3.56					17 / 0.48							134		DWR
KGO Radio Station Domestic well	5S/2W-5K1	6-10-55	56.5	528				107 / 4.65					24 / 0.68							42		USGS
		10-27-55		540				103 / 4.50					27 / 0.76							59		DWR
		6-19-56		537				110 / 4.80					25 / 0.70			0.23				50		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M					EAST BAY AREA OF SANTA CLARA VALLEY (Continued)																
J. B. [illegible] Irrigation and domestic well	5S/1E-30P1	6-9-55	68.5	994	8.0	87 / 4.34	19 / 1.58	120 / 5.22	1.6 / 0.04	0 / 0.00	44 / 7.28		66 / 1.86			0.31			47	296	0	USGS
		11-9-55		996				114 / 4.98					65 / 1.83							302		DWR
		6-19-56		954				108 / 4.68					66 / 1.85			0.27				289		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analyzed by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR) as indicated.

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M					SOUTH BAY AREA OF SANTA CLARA VALLEY																
City of Palo Alto Municipal well	5S/3W-35G1	6-16-55		684				81 / 3.52					67 / 1.89							170		USGS
		10-3-55	66	666				73 / 3.18					64 / 1.80							170		USGS
		7-3-56	68	1050				139 / 5.60					191 / 5.38							213		DWR
J. C. Rose Domestic well	6S/1E-4M1	6-14-55		1020				87 / 3.78					71 / 2.00							316		USGS
		10-5-55	63	178				11 / 0.48					9.8 / 0.28							64		USGS
		8-29-56	66	940				75 / 3.27					58 / 1.63							373		DWR
Wrigley Irrigation well	6S/1E-8N1	6-14-55		597				116 / 5.04					26 / 0.73							65		USGS
		10-5-55	61	556				101 / 4.39					26 / 0.73							68		USGS
		8-29-56	71	561				102 / 4.46					24 / 0.68							66		DWR
Wrigley Irrigation well	6S/1E-21G1	6-14-55		663				90 / 3.91					50 / 1.41							128		USGS
		10-5-55	67	628				80 / 3.48					51 / 1.44							128		USGS
W. Lucnado Irrigation well	6S/1E-30N1	6-14-55		585				30 / 1.30					28 / 0.79							260		USGS
		10-5-55	64	614				30 / 1.30					30 / 0.85							262		USGS
		8-29-56	63	600				30 / 1.30					25 / 0.71							262		DWR
Agnew State Hospital Irrigation well	6S/1W-1P3	8-20-55	74	478	8.1	14 / 0.70	2.7 / 0.22	91 / 3.96	0.8 / 0.02	0 / 0.00	242 / 3.97	24 / 0.50	21 / 0.59	0.3 / 0.00	0.0	0.05	24	297	81	46	0	USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million — Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ — Total ppm	Hardness as $CaCO_3$ — NC ppm	Analyzed by [c]
	MDR&M					SOUTH BAY AREA OF SANTA CLARA VALLEY (Continued)																
J. W. Watrous Domestic and Irrigation well	6S/1W-11B1	8-29-56	61	561				40 / 1.25					21 / 0.60					211				DWR
J. W. Watrous Domestic and Irrigation well	6S/1W-11C2	6-14-55		540				53 / 2.30					22 / 0.62					156				USGS
		10-5-55	62	565				47 / 2.04					24 / 0.68					202				USGS
Agnew State Hospital Boiler water and Domestic well	6S/1W-13N1	12-13-55		534		52 / 2.60	14 / 1.14	38 / 1.66	1.33 / 0.03	0 / 0.00	261 / 4.29	25 / 0.52	23 / 0.64	0.02 / 0	0.13 / 0.01	0.13	27	311	31	187	104	DWR
Silva Irrigation well	6S/1W-14L4	6-14-55		560				40 / 1.74					20 / 0.56							205		USGS
		10-5-55	62	646				46 / 2.00					31 / 0.87							248		USGS
		8-29-56	65	632				44 / 1.90					28 / 0.80							253		DWR
A. T. Collier Corp. Industrial well	6S/1W-16A1	6-14-55		412				68 / 2.96					14 / 0.40							70		USGS
		10-5-55	74	416				71 / 3.09					14 / 0.40							70		USGS
		8-29-56	74	420				70 / 3.06					13 / 0.36							69		DWR
R. T. Collier Corp. Domestic and Irrigation well	6S/1W-19B1	6-15-55		556				47 / 2.04					28 / 0.79							148		USGS
		10-4-55		598				43 / 1.87					28 / 0.79							228		USGS
		7-13-56	72	480				42 / 1.83					18 / 0.51							157		DWR
F. A. Wilcox Bros. Irrigation well	6S/1W-26D1	6-14-55		420				60 / 2.61					20 / 0.56							83		USGS
		10-5-55	61	439				55 / 2.39					24 / 0.68							107		USGS
		8-29-56	64	432				50 / 2.17					23 / 0.66							124		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M				SOUTH BAY AREA OF SANTA CLARA VALLEY(Continued)																	
Ketchum Irrigation well	6S/1W-29G1	6-15-55		518				37 / 1.61					22 / 0.62							202		USGS
Ketchum Domestic and Irrigation well	6S/1W-33C1	6-15-55		463				25 / 1.09					14 / 0.40							194		USGS
		10-4-55	64	488				27 / 1.17					14 / 0.40							195		USGS
		7-13-56	68	478				26 / 1.12					12 / 0.35							198		DWR
Swimmel Irrigation well	6S/2W-7G1	6-16-55		833				65 / 2.83					79 / 2.23							282		USGS
		10-3-55	69	672				47 / 2.04					38 / 1.07							672		USGS
M. Rani Irrigation well	6S/2W-9G1	6-16-55		2840	7.5	260 / 12.97	150 / 12.33	130 / 5.65	1.4 / 0.04	0 / 0.00	424 / 6.95	370 / 7.70	515 / 14.52	48 / 0.77	0.1 / 0.01	0.16	30	1710	18	1260	912	USGS
		10-4-55	62	2520				102 / 4.44					458 / 12.92							1130		USGS
		7-12-56	64	2600				111 / 4.85					482 / 13.59							1145		DWR
John H. Cue Domestic well	6S/2W-9H1	6-16-55		561				60 / 2.61					40 / 1.13							165		USGS
		10-4-55	60	551				61 / 2.65					34 / 0.96							164		USGS
		8-26-56	67	558				61 / 2.65					32 / 0.91							167		DWR
M. H. Holthouse Irrigation well	6S/2W-14R1	6-15-55		507				46 / 2.00					19 / 0.54							173		USGS
		10-4-55	64	517				40 / 1.74					26 / 0.73							186		USGS
		8-28-56	65	626				36 / 1.56					27 / 0.76							261		DWR
Ormande Irrigation and Domestic well	6S/2W-16Q1	6-16-55		909				38 / 1.65					52 / 1.47							382		USGS

o Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	MDB&M				SOUTH BAY AREA OF SANTA CLARA VALLEY (Continued)																	
Crmande Irrigation and Domestic well	6S/2W-16Q1	10-3-55	63	821				39 / 1.70					50 / 1.41							360		USGS
		7-13-56	64	1088				36 / 1.55					62 / 1.75							532		DWR
City of Palo Alto	6S/2W-17.1	10-3-55	69	672				47 / 2.04					38 / 1.07							259		USGS
		7-12-56	73	649				46 / 2.00					42 / 1.18			.09				221		DWR
Antoka Irrigation and Domestic well	6S/2W-17R1	6-16-55		1090				48 / 2.09					74 / 2.09							516		USGS
		10-3-55	67	1030				47 / 2.04					63 / 1.78							475		USGS
		7-12-56	65	1618				56 / 2.44					86 / 2.42							798		DWR
Irrigation well	6S/2W-24M2	6-15-55		671				34 / 1.48					24 / 0.68							256		USGS
		10-4-55	64	583				36 / 1.57					24 / 0.68							235		USGS
		7-13-56	70	482				38 / 1.67					20 / 0.56							166		DWR
W. E. Joseph Irrigation well	6S/2W-28R1	6-15-55		541				22 / 0.96					22 / 0.62							221		USGS
		10-5-55	63	549				22 / 0.96					26 / 0.73							258		USGS
		7-13-56	63	527				20 / 0.87					23 / 0.65							244		DWR
Slonaker Irrigation and Domestic well	6S/2W-29D2	8-29-56	63	695				41 / 1.80					33 / 0.94							265		DWR
H. Mantelli Irrigation and Domestic well	6S/2W-34M1	6-15-55		485				21 / 0.91					20 / 0.56							220		USGS
		10-4-55		483				21 / 0.91					20 / 0.56							216		USGS
		8-29-56	67	471				20 / 0.87					18 / 0.50							214		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS) Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR) or collected

a Determined by addition of constituents
b Gravimetric determination.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	MDB&M					SOUTH BAY AREA OF SANTA CLARA VALLEY (Continued)																
O. P. Glunaich Irrigation well	6S/2W-36H2	6-15-55		700				30 / 1.30					46 / 1.30							307		USGS
		10-4-55	63	737				34 / 1.48					54 / 1.52							320		USGS
		8-29-56	66	687				31 / 1.33					47 / 1.33							267		DWR
City of Palo Alto Municipal well	6S/3W-18B1	6-16-55		1100				135 / 5.87					175 / 4.94							239		USGS
		10-5-55	72	1100				140 / 6.09					185 / 5.22							238		USGS
		7-12-56	72	1000				133 / 5.80					173 / 4.87							189		DWR
City of Palo Alto Municipal well	6S/3W-20D1	6-16-55		676				66 / 2.87					46 / 1.30							230		USGS
		10-3-55	66	670				62 / 2.70					48 / 1.35							207		USGS
		7-12-56	68	664				64 / 2.78					48 / 1.36							202		DWR
City of Palo Alto Municipal well	6S/3W-12C1	6-16-55		612				77 / 3.35					44 / 1.24							148		USGS
		10-3-55	71	617				78 / 3.39					46 / 1.30							144		USGS
		7-12-56	71	610				77 / 3.36					43 / 1.22							141		DWR
L. E. Inman Irrigation well	7S/1W-3G1	6-15-55		601				24 / 1.04					20 / 0.56							218		USGS
		10-4-55	62	609				23 / 1.00					22 / 0.62							279		USGS
		8-28-56	67	610				21 / 0.93					21 / 0.58							279		DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M				SOUTH BAY AREA OF SANTA CLARA VALLEY (Continued)																	
A. W. Kenyon Irrigation well	7S/1W-8H1	6-15-55		453				22 / 0.96					16 / 0.45							196		USGS
		8-28-56	62	492				25 / 1.07					19 / 0.54							209		DWR
Arch Wilson Irrigation well	7S/2W-11R1	6-15-55		556				23 / 1.00					23 / 0.65							215		USGS
		8-29-56	60	614				21 / 0.93					22 / 0.62							265		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination
c Analyses by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M						LIVERMORE VALLEY															
T. P. Bishop Co Irrigation well	2S/1W-22A1	6-7-55	64	620				46 / 2.00												238		USGS
		8-2-55	66	692									78 / 2.20			0.06						USGS
Peter Lagnino Domestic well	2S/2E-27C1	11-17-55		5040				871 / 37.90					1440 / 40.56							638		DWR
		11-8-56		4870				825 / 35.87					1370 / 38.63			18.0				597		DWR
John H. Hanna Domestic well	2S/2E-35G1	6-6-55	79	1470				244 / 10.61												206		USGS
		8-3-55	75	1530									287 / 8.09			4.1						USGS
		10-7-55	66	1560				248 / 10.78					298 / 8.40			4.5				217		USGS
		11-22-55		1520				230 / 10.00					284 / 8.00							208		DWR
		11-8-56		1390				252 / 10.95					252 / 7.11			4.2				194		DWR
E. B. and J. Nevin Stock well	3S/1W-1G1	6-7-55	58	1020				76 / 3.30												402		USGS
		8-2-55	82	1030									70 / 1.97			0.23						USGS
		10-6-55	60	1030				75 / 3.26					69 / 1.95			0.28				415		USGS
		11-17-55		1018				74 / 3.23					68 / 1.92							407		DWR
		4-9-56		698				67 / 2.9					79 / 2.22			0.25				224		DWR
		11-1-56		1010				75 / 3.26					74 / 2.09			0.22				387		DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million (equivalents per million)												Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$		Analyzed by [c]
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	N.C. ppm	
	NE&M					LIVERMORE VALLEY(Continued)																
Welfare Farm Irrigation well	3S/1E-7N1	8-2-55	63	1450	7.6	96 / 4.79	80 / 6.57	100 / 4.35	2.5 / 0.06	0 / 0.00	492 / 8.06	109 / 2.27	178 / 5.02	24 / 0.39	0	1.1	29	862	28	568	165	USGS
		10-6-55	62	1100				81 / 3.52					116 / 3.27			0.92				426		USGS
U. S. Navy Domestic and Irrigation well	3S/1E-8H2	6-7-55	63	1200				95 / 4.13												437		USGS
		8-2-55	64	960									96 / 2.71			0.92						USGS
		10-6-55	62	1080				84 / 3.65					122 / 3.44			0.29				381		USGS
		11-8-56		863				64 / 2.78					78 / 2.20			0.72				327		DWR
E. Hago Irrigation well	3S/1E-10R1	6-7-55	61	917				31 / 1.35												439		USGS
		8-2-55	63	1040									86 / 2.43			0.79						USGS
		10-6-55	61	1060				35 / 1.52					88 / 2.48			0.79				516		USGS
E. Hageman Domestic and Irrigation well	3S/1E-11H1	6-7-55	66.5	633				24 / 1.04												292		USGS
		8-2-55	70	628									33 / 0.93			0.18						USGS
		10-6-55	62	667				24 / 1.04					35 / 0.99			0.30				300		USGS
		11-8-56		632				23 / 1.00					34 / 0.96			0.26				289		DWR
California Rock & Gravel Co. Domestic well	3S/1E-13P2	6-7-55	63	536				31 / 1.35												222		USGS
		8-2-55	66	547									37 / 1.04			0.23						USGS
		10-6-55	65	549				29 / 1.26					33 / 0.93			0.34				228		USGS
		11-1-56		537				28 / 1.22					32 / .90			0.32				221		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	MDF&M						LIVERMORE VALLEY(Continued)															
G. G. Jamieson Irrigation Well	3S/1E-14F1	6-7-55	63	673				39 / 1.70												286		USGS
		8-2-55	64	703									47 / 1.33			0.44						USGS
		10-6-55	62	696				37 / 1.61					42 / 1.18			0.43				298		USGS
		11-8-56		586				24 / 1.04					30 / 0.85			0.31				251		DWR
Henry Kaiser Domestic well	3S/1E-14P1	11-22-55		730				46 / 1.99					83 / 2.34							268		DWR
		4-9-56		942				47 / 2.05					113 / 3.2			0.37				376		DWR
		11-1-56		754				48 / 2.09					95 / 2.68			0.11				297		DWR
H. J. Kaiser Industrial well	3S/1E-16H1	10-6-55	63	515				22 / 0.96					22 / 0.62			0.23				229		USGS
		11-1-56		523				23 / 1.00					24 / .68			0.14				226		DWR
Henry Kaiser Irrigation and Domestic well	3S/1E-15M1	11-1-56		527				27 / 1.17					30 / 0.85			0.16				224		DWR
San Francisco Water Dept. Municipal and Irrigation well	3S/1E-19A5	6-7-55	61	680				27 / 1.17												298		USGS
		8-2-55	62	744									39 / 1.10			0.24						USGS
		10-6-55	63	785				33 / 1.43					38 / 1.07			0.21				357		USGS
		11-1-56		900				38 / 1.65					50 / 1.41			0.32				421		DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Co)	Magnesium (Mg)	Sodium (No)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	MDB&M						LIVERMORE VALLEY(Continued)															
John Spark Domestic well	3S/2E-1A1	11-22-55		4045				563 / 24.50					1060 / 29.86							845		DWR
		4-9-56		3902				528 / 23.00					812 / 29.90			11.8				739		DWR
		11-15-56		4140				545 / 23.70					1060 / 29.89			8.5				883		DWR
Irrigation well	3S/2E-3Q1	8-3-55	69	830				85 / 3.70					78 / 2.20							240		USGS
California Water Service Co. Municipal well	3S/2E-4H2	6-6-55	69.5	603				40 / 1.74												224		USGS
		8-3-55	74	721									41 / 1.16			0.55						USGS
		11-8-56		758				21 / 1.35					407 / 11.48			0.55				354		DWR
Domestic and Irrigation well	3S/2E-4M1	11-22-55		2050				242 / 10.53					234 / 6.59							619		DWR
		4-9-56		1910				248 / 10.8					235 / 6.64			4.9				507		DWR
		11-8-56		2330				256 / 11.13					246 / 6.94			3.8				766		DWR
H. L. Hageman Irrigation well	3S/2E-7E1	6-7-55	74	678				27 / 1.17												324		USGS
		8-3-55	71	693									35 / 0.99			0.26						USGS
		10-6-55	62	702				25 / 1.09					31 / 0.87			0.33				328		USGS
		11-8-56		740				26 / 1.13					39 / 1.10			0.24				351		DWR
City of Livermore Municipal well	3S/2E-8E1	6-7-55	69	722				26 / 1.13												347		USGS
		8-3-55	67	731									37 / 1.04									USGS
		10-6-55	70	748				25 / 1.09					38 / 1.07			0.31				360		USGS

a Determined by addition of constituents.

b Gravimetric determination.

c Analyses by U.S. Geological Survey Quality of Water Branch (USGS) Pacific Coast [illegible]

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M						LIVERMORE VALLEY (Continued)															
California Water Service Co. Municipal well	3S/2E-8H1	6-7-55	71	652				36 / 1.57												277		USGS
		8-3-55	76	733									40 / 1.13			0.33						USGS
		10-7-55	71	730				38 / 1.65					42 / 1.18			0.43				311		USGS
		11-8-56		768				32 / 0.39					43 / 1.21			0.27				361		DWR
J. H. Barber Domestic and Irrigation well	3S/2E-10E1	6-7-55	63	1050				59 / 2.57												427		USGS
		8-3-55	64	1110									125 / 3.53			0.48						USGS
		10-6-55	62	1070				59 / 2.57					123 / 3.47			0.48				436		USGS
		11-15-56		1240				64 / 2.78					140 / 3.95			0.51				510		DWR
W. G. Wagoner Irrigation well	3S/2E-11K1	6-6-55	69	988				116 / 5.04												247		USGS
California Water Service Co. Municipal well	3S/2E-17D1	6-7-55	61	959				98 / 4.26												310		USGS
		8-3-55	66	946									112 / 3.16			1.4						USGS
		10-6-55	58	937				90 / 3.91					102 / 2.88			1.2				300		USGS
		11-8-56		711				36 / 1.57					39 / 1.10			0.26				317		DWR
W. Wagoner Irrigation well	3S/2E-17N1	6-7-55	71	857				162 / 7.04												88		USGS
		8-3-55	72	866									94 / 2.65			2.4						USGS
		10-6-55	69	878				164 / 7.13					96 / 2.71			2.9				93		USGS
		11-8-56		864				162 / 7.04					93 / 2.62			1.7				86		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M						LIVERMORE VALLEY (Continued)															
E. A. Wittcher Domestic and irrigation well	3S/2E-20K1	6-7-55	68.5	637				80 / 3.48												170		USGS
		6-3-55	73	677									57 / 1.61			0.03						USGS
		10-6-55	61	695				84 / 3.65					58 / 1.64			0.14				181		USGS
		11-8-56		662				81 / 3.52					46 / 1.30			0.14				177		DWR
Irrigation well	3S/2E-21E1	11-17-55		863				65 / 2.83					94 / 2.65							312		DWR
A. A. Linsman Irrigation well	3S/2E-22E1	6-25-55		1350				168 / 7.31												328		USGS
		8-3-55	67	883									83 / 2.34			0.12						USGS
		4-9-56		1080				79 / 3.46					174 / 4.91			0.18				405		DWR
		11-15-56		882				71 / 3.09					106 / 2.99			0.09				305		DWR
Wente Bros. Domestic well	3S/2E-22H1	11-28-55		1065				112 / 4.87					188 / 5.30							312		DWR
		4-9-56		1098				107 / 4.65					206 / 5.8			1.12				321		DWR
B. G. Wood Irrigation well	3S/2E-29D1	6-7-55	71.5	713				97 / 4.22												158		USGS
		8-3-55	71	728									81 / 2.28			0.49						USGS
		10-6-55	71	729				99 / 4.30					83 / 2.34			0.51				157		USGS
		11-8-56		729				117 / 5.09					87 / 2.45			0.46				107		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR) as indicated.

a Determined by addition of constituents
b Gravimetric determination.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	NEVADA					LIVERMORE VALLEY (Continued)																
Mangola Brothers Domestic well	3S/3E-7Q1	6-6-55	71	2010				284 / 12.35												452		USGS
		8-3-55	78	4350									1070 / 30.18			19						USGS
		10-6-55	71	4480				740 / 32.18					1080 / 30.46			18				620		USGS
Joe Amaral Irrigation well	3S/3E-19Q1	6-6-55	69	1500				266 / 11.57												274		USGS
		8-3-55	71	1600									229 / 6.46			7.2						USGS
		10-6-55	64	1600				260 / 11.31					226 / 6.43			7.8				272		USGS
		11-15-56		1540				290 / 12.61					201 / 5.67			7.1				244		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					PAJARO VALLEY-SANTA CRUZ-MONTEREY																
Rinaldi Bros. Irrigation well	12S/1E-10H1	4-14-55	63	1320	8.0	87 / 4.34	63 / 5.18	79 / 3.44	4.1 / 0.10	0 / 0.00	228 / 3.74	69 / 1.44	276 / 7.78	2.9 / 0.05	0.1 / 0.01	0.01	52	745	26	476	289	USGS
		10-4-55	61	1570				95 / 4.13					357 / 10.07							542		USGS
		5-15-56		394				18 / 0.79					20 / 0.55			0.03				163		DWR
C. H. Wait Irrigation well	12S/1E-14A1	4-14-55	64	423	8.5	33 / 1.65	20 / 1.65	29 / 1.26	2.7 / 0.07	8 / 0.27	202 / 3.31	27 / 0.56	19 / 0.54	0.1 / 0.00	0 / 0.0	0.05	35	273	27	165	0	USGS
		5-15-56		402				18 / 0.79					10 / 0.53			0.06				168		DWR
Strobel Irrigation well	12S/1E-24G1	6-23-55	66.5	508				28 / 1.22					22 / 0.62							216		USGS
E. L. Paden Domestic well	12S/1E-24M1	4-14-55	61	549									29 / 0.82			0.04				175		USGS
		6-23-55	62.5	571				50 / 2.17					34 / 0.96							182		USGS
		10-4-55	58	559				46 / 2.00					30 / 0.85							177		USGS
T. C. Morley Domestic and irrigation well	12S/1E-25E2	6-23-55	72	476				47 / 2.04					17 / 0.48							147		USGS
Tottino Irrigation well	12S/1E-25C1	6-23-55	72	907	8.4	41 / 2.05	25 / 2.03	101 / 4.39	14 / 0.36	4 / 0.13	181 / 2.97	56 / 1.17	164 / 4.63	1.4 / 0.02	0.1 / 0.01	0.03	32	528	50	204	56	USGS
		10-4-55	72	923				99 / 4.31					167 / 4.71							206		USGS
		7-11-56	73	938				100 / 4.32					174 / 4.89			0.11				209		DWR
A. L. Waugaman Irrigation well	12S/2E-7N1	6-22-55	63	492				22 / 0.96					18 / 0.51							217		USGS
		5-15-56		504				19 / 0.83					18 / 0.50			0.05				222		DWR
		7-10-56	66	439				22 / 0.94					17 / 0.48			0.08				190		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million												Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	NC ppm	
	MDR&W					PAJARO VALLEY-SANTA CRUZ-MONTEREY (Continued)																
Muramoto Domestic and Irrigation well	12S/2E-8F1	10-5-55	63	782				44 / 1.91					39 / 1.10							328		USGS
		7-10-56	67	813				59 / 2.58					51 / 1.45			0.17				314		DWR
Sneehy Irrigation well	12S/2E-12E1	6-22-55	61.5	1330				66 / 2.87					78 / 2.20							644		USGS
		10-4-55	63	1240				42 / 1.83					75 / 2.12							634		USGS
		7-10-56	61	1183				63 / 2.73					74 / 2.10			0.42				553		DWR
Mine Irrigation well	12S/2E-18A3	6-22-55	73	472				26 / 1.13					17 / 0.48							206		USGS
		5-15-56		435				22 / 0.95					12 / 0.33			0.08				187		DWR
E. Struve Irrigation well	12S/2E-18D1	7-11-56	65	428	8.0	31 / 1.57	24 / 2.0	21 / 0.93	2.7 / 0.07	0 / 0.00	214 / 3.51	30 / 0.63	14 / 0.40	0.3 / 0.01	0.1 / 0.01	0.08	51	279	20	179	13	DWR
Frank Tallog Irrigation well	12S/2E-18J1	4-14-55	64	530	8.4	54 / 2.69	22 / 1.85	29 / 1.26	2.5 / 0.06	6 / 0.20	272 / 4.46	37 / 0.77	19 / 0.54	0.3 / 0.00	0.0 / 0.00	0.11	37	341	22	227	0	USGS
		6-7-56	64	526	7.9	53 / 2.64	23 / 1.90	29 / 1.26	2.2 / 0.06	0 / 0.00	275 / 4.51	38 / 0.79	16 / 0.45	0.6 / 0.01	0.1 / 0.01	0.08	37	334	22	227	1	USGS
Emil Yappert Irrigation well	12S/2E-30F1	4-14-55	68	1310									276 / 7.78			0.04				548		USGS
Fenoglio Irrigation well	12S/2E-30N1	6-23-55	66	516				35 / 1.52					39 / 1.10							176		USGS
		10-4-55	64	615				98 / 4.26					45 / 1.27							76		USGS
		7-11-56	62	582				41 / 1.78					56 / 1.58			0.06				206		DWR
Young Irrigation well	12S/2E-30P1	7-11-56	65	572				38 / 1.67					35 / 0.98			0.13				222		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	KDB&M				PAJARO VALLEY-SANTA CRUZ-MONTEREY(Continued)																	
Z. Tornavaca Irrigation well	12S/2E-31K1	4-14-55	67	720									77 2.17			0.18				266		USGS
		10-4-55	66	756				48 2.09					90 2.54							282		USGS
		7-11-56	67	791				49 2.15					102 2.88			0.22				299		DWR
Johnson Irrigation well	12S/2E-32K1	6-23-55	66	544				47 2.04					74 2.09							154		USGS
		10-4-55	65	527				47 2.04					70 1.97							148		USGS
		7-11-56	63	503				49 2.13					65 1.84			0.03				141		DWR
R. H. Willoughby Irrigation well	13S/1E-1A1	6-23-55	64	1260				107 4.65					218 6.15							396		USGS
		10-3-55	62	1250				92 4.00					226 6.37							404		USGS
Farley Fruit Co. Irrigation well	13S/2E-6B1	7-11-56	65	1019				71 3.09					154 4.34			0.25				352		DWR
G. Hurley Irrigation well	13S/2E-6E1	6-23-55	66	1140				102 4.44					179 5.05							321		USGS
		10-5-55	60	1150				95 4.13					184 5.19							326		USGS
		7-11-56	66	1132				101 4.40					172 4.86							318		DWR
Geroge H. Hurley Irrigation well	13S/2E-6F3	4-14-55	67	910	8.3	49 2.45	32 2.63	93 4.04	3.6 0.09	4 0.13	266 4.36	60 1.25	126 3.55	0.5 0.01	0.0 0.00	0.20	45	544	44	254	29	USGS
D. Ecany Irrigation well	13S/2E-6M2	7-11-56	63	2410				183 7.95					417 11.75			0.09				774		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M				PAJARO VALLEY-SANTA CRUZ-MONTEREY (Continued)																	
F. Cappure Irrigation well	13S/2E-7B1	4-13-55	63	2130									396 / 11.17			0.13				740		USGS
		10-5-55	63	2310				135 / 5.87					458 / 12.92							820		USGS
		7-11-56	66	2491				151 / 6.57					585 / 16.50							870		DWR
F. Cappure Irrigation well	13S/2E-7B2	4-13-55	68	2410									620 / 17.49			0.24				816		USGS
		10-5-55	69	2820				178 / 7.74					762 / 21.49							952		USGS
		7-11-56		2616				191 / 8.29					709 / 20.00			0.27				829		DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	MONO							SALINAS VALLEY														
Montere[illegible] Salt Co. Domestic and Industrial well	13S/2E-7R1	8-8-55		939	8.2	22 / 1.10	5.8 / 0.48	154 / 6.70	2.6 / 0.09	0 / 0.00	267 / 4.38	88 / 1.83	74 / 2.09	0.0 / 0.00	0.2 / 0.01	0.13	46	526	80	78	0	USGS
		7-23-56	73	851	7.5	23 / 1.15	6.2 / 0.51	161 / 7.00	3.2 / 0.08	0 / 0.00	267 / 4.38	93 / 1.94	83 / 2.34	4.8 / 0.08	0.4 / 0.02	0.26	56	562	80	83	0	DWR
[illegible] Kimmoto Irrigation well	13S/2E-16E1	8-15-55		769	8.0	42 / 2.10	23 / 1.87	75 / 3.26	5.4 / 0.14	0 / 0.00	219 / 3.59	23 / 0.48	120 / 3.38	3.0 / 0.03	0.1 / 0.01	0.25	42	441	44	198	18	USGS
		7-23-56	66	1160	7.0	62 / 3.14	43 / 3.54	94 / 4.09	3.2 / 0.08	0 / 0.00	213 / 2.34	44 / 0.92	222 / 6.26	74 / 1.19	0.4 / 0.02	0.01	54	648	39	335	217	DWR
T. Leonardini Domestic and Irrigation well	13S/2E-19M1	8-8-55		898	7.7	52 / 2.59	26 / 2.15	92 / 4.00	2.6 / 0.07	0 / 0.00	230 / 3.77	28 / 0.58	154 / 4.34	0.0 / 0.00	0.1 / 0.01	0.11	45	513	45	237	49	USGS
		7-23-56	67	1030	7.9	64 / 3.19	34 / 2.80	97 / 4.22	27 / 0.07	0 / 0.00	223 / 3.66	33 / 0.69	203 / 5.72	1.1 / 0.02	0.1 / 0.01	0.03	56	601	41	298	117	DWR
Permanente Industrial well	13S/2E-20P1	9-5-56	72.5	761	7.6	23 / 1.15	12 / 0.99	114 / 4.96	2.9 / 0.07	0 / 0.00	174 / 2.85	19 / 0.40	128 / 3.61	0.7 / 0.01	0.1 / 0.01	0.14	46	442	69	107	0	DWR
Henry Kate Irrigation well	13S/2E-20R1	8-8-55		2510	7.6	125 / 6.24	79 / 6.46	252 / 10.96	8.0 / 0.15	0 / 0.00	169 / 2.77	93 / 1.94	660 / 18.61	4.[illegible] / 0.06	0 / 0.00	0.02	39	1340	46	635	495	USGS
J. Tate	13S/2E-20R2	8-27-56	69	924	7.0	64 / 3.19	28 / 2.30	84 / 3.65	2.4 / 0.06	0 / 0.00	237 / 3.88	50 / 1.04	155 / 4.37	0.3 / 0.00	0.1 / 0.01	0.02	60	561	40	273	80	DWR
Permanente Metals Corp. Industrial well	13S/2E-29Q4	8-8-55		726	8.1	42 / 2.10	12 / 1.01	95 / 4.13	3.2 / 0.08	0 / 0.00	232 / 3.80	17 / 0.35	106 / 2.99	0.2 / 0.00	0.1 / 0.01	0.16	38	428	56	155	0	USGS
J. J. King Irrigation well	13S/2E-30L1	8-5-55		947	7.8	58 / 1.90	12 / 0.98	154 / 6.70	4.6 / 0.12	0 / 0.00	283 / 4.64	37 / 0.77	139 / 3.92	0.0 / 0.00	0.3 / 0.02	0.21	43	567	69	144	0	USGS
		9-5-56	71	849	8.0	22 / 1.10	11 / 0.90	138 / 6.00	4.4 / 0.11	0 / 0.00	226 / 3.71	32 / 0.67	137 / 3.86	1.2 / 0.02	0.1 / 0.01	0.04	54	511	74	101	0	DWR
J. J. King Irrigation well	13S/2E-31D1	8-5-55		695	8.0	45 / 2.25	13 / 1.07	80 / 3.48	2.6 / 0.07	0 / 0.00	248 / 4.06	20 / 0.42	88 / 2.48	0.1 / 0.00	0.1 / 0.01	0.16	46	417	51	166	0	USGS
		8-28-56	70	688	7.8	46 / 2.30	13 / 1.07	80 / 3.48	3.2 / 0.08	0 / 0.00	257 / 4.21	19 / 0.40	90 / 2.54	0.9 / 0.01	0.2 / 0.02	0.05	42	420	50	170	0	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	IDNN					SALINAS VALLEY (Continued)																
Molera Estate Domestic well	13S/2E-31K2	8-5-55		622	7.9	44 / 2.20	13 / 1.10	69 / 3.00	3.1 / 0.08	0 / 0.00	240 / 3.93	15 / 0.31	70 / 1.97	0.5 / 0.01	0.2 / 0.01	0.17	41	374	47	165	0	USGS
		8-28-56	67.5	619	7.7	44 / 2.20	13 / 1.07	69 / 3.00	2.7 / 0.07	0 / 0.00	241 / 3.95	16 / 0.33	76 / 2.14	2.9 / 0.05	0.2 / 0.01	0.19	53	396	47	165	0	DWR
Irrigation well	13S/2E-31L1	8-5-55		667	7.7	43 / 2.15	18 / 1.51	65 / 2.83	3.6 / 0.09	0 / 0.00	192 / 3.15	76 / 1.58	61 / 1.72	1.9 / 0.03	0.1 / 0.01	0.11	41	405	43	183	26	USGS
E. Bellone Irrigation well	13S/2E-31N2	8-5-55		920	8.0	50 / 2.50	21 / 1.72	102 / 4.44	3.2 / 0.08	0 / 0.00	236 / 3.87	26 / 0.54	158 / 4.46	1.9 / 0.03	0.3 / 0.02	0.19	44	523	51	211	17	USGS
		8-28-56	64.5	857	7.4	51 / 2.54	17 / 1.40	99 / 4.31	3.4 / 0.09	0 / 0.00	242 / 3.97	26 / 0.54	137 / 3.86	2.0 / 0.03	0.3 / 0.02	0.17	54	509	52	197	0	DWR
E. Bellone Irrigation well	13S/2E-31N2	8-28-56	71.5	1030	7.2	75 / 3.74	27 / 2.22	90 / 3.91	3.7 / 0.09	0 / 0.00	210 / 3.59	54 / 1.12	194 / 5.47	1.2 / 0.02	0.5 / 0.03	0.12	49	603	39	298	69	DWR
C. P. Overhouse Irrigation well	13S/2E-32C1	8-5-55		547	8.0	42 / 2.10	14 / 1.14	50 / 2.18	2.7 / 0.07	0 / 0.00	220 / 3.61	16 / 0.33	58 / 1.64	0.2 / 0.00	0.1 / 0.01	0.06	41	332	40	162	0	USGS
		8-28-56	63	551	7.4	41 / 2.05	14 / 1.15	56 / 2.44	2.7 / 0.07	0 / 0.00	219 / 3.59	16 / 0.33	59 / 1.66	1.9 / 0.03	0.2 / 0.01	0.07	54	353	43	160	0	DWR
Cooper Estate Irrigation well	13S/2E-32J1	8-16-55		1340	8.2	109 / 5.44	41 / 3.36	85 / 3.70	4.6 / 0.12	0 / 0.00	204 / 3.34	42 / 0.87	295 / 8.32	0 / 0.00	0.1 / 0.01	0.11	38	715	29	440	273	USGS
Molera Estate Irrigation well	13S/2E-32N1	8-5-55		600	7.5	37 / 1.85	12 / 1.00	66 / 2.87	2.7 / 0.07	0 / 0.00	228 / 3.74	20 / 0.42	63 / 1.78	0.7 / 0.01	0.3 / 0.02	0.08	44	358	50	142	0	USGS
		8-28-56	73	575	7.4	38 / 1.90	12 / 0.99	69 / 3.00	2.5 / 0.06	0 / 0.00	225 / 3.69	21 / 0.44	63 / 1.78	1.6 / 0.03	0.3 / 0.02	0.13	58	377	50	145	0	DWR
Dorothy Orcutt, et al Irrigation well	13S/2E-33E1	8-16-55		577	7.7	46 / 2.30	16 / 1.30	54 / 2.35	3.1 / 0.08	0 / 0.00	213 / 3.49	28 / 0.58	61 / 1.72	2.3 / 0.04	0.3 / 0.02	0.10	40	356	39	180	5	USGS
C. Rissotti Irrigation well	13S/2E-33R1	7-27-55		589	7.6	49 / 2.45	17 / 1.41	47 / 2.04	2.6 / 0.07	0 / 0.00	221 / 3.62	24 / 0.50	62 / 1.75	1.6 / 0.03	0.2 / 0.01	0.10	40	352	34	193	12	USGS
		8-27-56	64.5	560	7.7	49 / 2.45	17 / 1.40	47 / 2.04	3.2 / 0.08	0 / 0.00	234 / 3.83	25 / 0.52	65 / 1.83	0.9 / 0.01	0.4 / 0.02	0.01	36	359	34	191	1	DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDRAM					SALINAS VALLEY (Continued)																
Dorothy V. Orcutt, et al Irrigation well	14S/2E-4G1	8-23-55		681	7.8	56 / 2.79	20 / 1.65	54 / 2.35	3.3 / 0.08	0 / 0.00	199 / 3.26	115 / 2.39	46 / 1.30	0.1 / 0.00	0.1 / 0.01	0.16	43	436	34	222	59	USGS
Molera Estate Irrigation well	14S/2E-5R2	8-23-55		682	8.2	58 / 2.89	20 / 1.67	54 / 2.35	3.3 / 0.08	0 / 0.00	204 / 3.34	110 / 2.29	51 / 1.44	0.0 / 0.00	0.2 / 0.01	0.17	42	439	34	228	61	USGS
		9-6-56	68.5	707	6.9	61 / 3.04	20 / 1.64	53 / 2.31	4.5 / 0.12	0 / 0.00	204 / 3.34	107 / 2.23	64 / 1.80	0.2 / 0.00	0.2 / 0.01	0.18	42	452	32	236	17	DWR
Mrs. Lottie Martin Irrigation well	14S/2E-6Q1	8-4-55		590	7.5	33 / 1.65	12 / 1.01	71 / 3.09	2.7 / 0.07	0 / 0.00	221 / 3.62	25 / 0.52	62 / 1.75	0.7 / 0.01	0.3 / 0.02	0.11	47	363	53	134	0	USGS
		8-28-56	74.5	581	7.5	33 / 1.65	13 / 1.07	74 / 3.22	3.2 / 0.08	0 / 0.00	224 / 3.67	30 / 0.62	65 / 1.83	1.1 / 0.02	0.4 / 0.02	0.00	51	391	53	134	0	DWR
E. Struve Irrigation well	14S/2E-6R2	8-4-55		549	7.6	32 / 1.65	13 / 1.03	65 / 2.83	2.6 / 0.07	0 / 0.00	215 / 3.52	23 / 0.48	54 / 1.52	1.0 / 0.02	0.3 / 0.02	0.10	46	344	51	134	0	USGS
		8-28-56	73	544	7.4	34 / 1.70	12 / 0.99	66 / 2.87	2.6 / 0.07	0 / 0.00	211 / 3.46	25 / 0.52	57 / 1.61	3.1 / 0.05	0.3 / 0.02	0.13	58	362	51	133	0	DWR
Dorothy V. Orcutt Irrigation well	14S/2E-9K1	9-12-56	68	658	8.0	56 / 2.79	19 / 1.56	51 / 2.22	3.0 / 0.08	0 / 0.00	192 / 3.15	115 / 2.39	48 / 1.35	1.5 / 0.02	0.3 / 0.02	0.26	42	431	33	218	0	DWR
J. P. Rogers Irrigation well	14S/2E-11D1	8-15-55		503	8.0	49 / 2.45	15 / 1.20	34 / 1.48	2.0 / 0.05	0 / 0.00	240 / 3.93	9.6 / 0.20	40 / 1.13	0 / 0.00	0.2 / 0.01	0.09	40	308	29	182	0	USGS
E. C. Eaton Irrigation well	14S/2E-12Q1	8-8-55		510	7.7	55 / 2.74	14 / 1.15	31 / 1.35	1.8 / 0.05	0 / 0.00	246 / 4.03	9.6 / 0.20	37 / 1.04	1.7 / 0.03	0.3 / 0.02	0.04	33	304	26	195	0	USGS
		8-29-56	64.5	514	7.0	54 / 2.69	15 / 1.23	33 / 1.43	2.7 / 0.07	0 / 0.00	251 / 4.11	9.9 / 0.21	40 / 1.13	1.8 / 0.03	0.6 / 0.03	0.05	39	319	26	196	0	DWR
L. A. Wilder Domestic well	14S/2E-14N1	8-4-55		646	7.5	54 / 2.69	18 / 1.45	53 / 2.31	3.5 / 0.09	0 / 0.00	217 / 3.56	55 / 1.15	62 / 1.75	2.0 / 0.03	0.1 / 0.01	0.12	44	399	35	207	29	USGS
		8-29-56	68.5	642	7.2	54 / 2.69	17 / 1.40	55 / 2.39	4.0 / 0.10	0 / 0.00	222 / 3.64	56 / 1.17	67 / 1.89	2.3 / 0.04	0.4 / 0.02	0.12	39	404	36	204	23	DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination
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ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	YOLO																					
						SALINAS VALLEY (Continued)																
Monterey County Bank Irrigation well	14S/2E-15L1	8-4-55		697	7.5	64 / 3.19	19 / 1.55	63 / 2.31	2.4 / .06	0 / 0	216 / 3.54	100 / 2.08	58 / 1.64	0.1 / 0.00	0.1 / 0.01	0.19	41	439	32	237	80	USGS
		9-4-56	64	662	8.0	62 / 3.09	19 / 1.56	53 / 2.31	2.4 / 0.06	0 / 0.00	226 / 3.57	100 / 2.19	51 / 1.41	0.2 / 0.00	0.1 / 0.01	0.09	45	445	33	231	84	PCC
John M. Orcutt Irrigation well	14S/2E-16A1	8-10-55		689	7.5	62 / 2.89	20 / 1.67	54 / 2.35	2.6 / 0.07	0 / 0.00	197 / 3.23	112 / 2.33	51 / 1.44	0.00 / 0.00	0.2 / 0.01	0.23	43	439	34	226	80	USGS
		8-27-56	68	681	7.6	60 / 2.99	20 / 1.64	54 / 2.35	3.0 / 0.08	0 / 0.00	207 / 3.39	116 / 2.41	54 / 1.52	0.1 / 0.00	0.2 / 0.01	0.13	28	449	33	232	84	DWR
J. T. Armstrong Co. Irrigation well	14S/2E-19D1	8-4-55		1060	7.8	93 / 4.70	32 / 2.57	80 / 3.48	4.1 / 0.10	0 / 0.00	244 / 4.00	142 / 2.96	129 / 3.64	5.0 / 0.08	0.2 / 0.01	0.19	38	645	32	369	168	USGS
		8-28-56	67.5	1100	7.6	100 / 5.04	35 / 2.72	80 / 3.48	3.9 / 0.10	0 / 0.00	232 / 4.00	154 / 3.21	141 / 3.98	7.0 / 0.11	0.2 / 0.01	0.16	42	686	30	394	174	DWR
A. F. Bordres Irrigation and domestic well	14S/2E-23C1	8-16-55		881	8.0	81 / 4.04	2.4 / 1.98	68 / 2.96	4.6 / 0.12	0 / 0.00	236 / 3.87	120 / 2.50	86 / 2.43	1.6 / 0.02	0.2 / 0.01	0.20	42	554	32	301	124	USGS
		9-12-56	70	835	7.7	72 / 3.94	25 / 2.06	60 / 2.61	4.2 / 0.10	0 / 0.00	204 / 3.34	132 / 2.75	85 / 2.43	3.2 / 0.05	0.3 / 0.02	0.22	46	528	31	290	122	DWR
M. T. Deserpa Irrigation well	14S/2E-24E1	7-28-55		562	7.5	44 / 2.20	15 / 1.20	53 / 2.31	3.3 / 0.08	0 / 0.00	209 / 3.28	41 / 0.85	56 / 1.58	1.6 / 0.03	0.1 / 0.01	0.03	44	356	40	170	8	USGS
		8-29-56	68.5	535	7.6	42 / 2.15	14 / 1.15	47 / 2.01	3.2 / 0.08	0 / 0.00	203 / 3.33	22 / 0.47	56 / 1.58	0.6 / 0.01	0.2 / 0.01	0.07	42	338	38	167	1	DWR
M. T. De Serpa Irrigation well	14S/2E-25B1	7-24-55		1190	7.7	105 / 5.24	30 / 2.24	92 / 4.00	4.3 / 0.11	0 / 0.00	237 / 5.92	112 / 2.29	145 / 4.09	11 / 0.18	0.2 / 0.01	0.15	27	710	32	421	149	USGS
Irrigation well	14S/2E-26A1	8-28-55		1070	7.7	102 / 5.04	34 / 2.82	76 / 3.31	4.3 / 0.11	0 / 0.00	254 / 4.33	157 / 3.27	129 / 3.64	1.6 / 0.03	0.2 / 0.01	0.17	29	672	29	393	177	USGS
		8-29-56	65	1220	7.4	101 / 5.10	36 / 2.96	78 / 3.39	3.9 / 0.10	0 / 0.00	251 / 4.28	202 / 3.37	140 / 3.95	2.0 / 0.03	0.2 / 0.01	0.14	40	694	29	409	193	DWR
David P. McFadden Irrigation well	14S/2E-31C1	7-29-55		449	7.7	52 / 2.59	14 / 1.20	26 / 1.13	3.1 / 0.08	0 / 0.00	165 / 2.70	84 / 1.71	17 / 0.48	0.0 / 0.00	0.2 / 0.01	0.03	41	315	23	185	55	USGS
		8-24-56	71.5	479	7.0	54 / 2.69	17 / 1.37	25 / 1.09	3.2 / 0.08	0 / 0.00	172 / 2.82	84 / 1.75	18 / 0.51	0.4 / 0.01	0.4 / 0.02	0.03	37	320	22	190	47	DWR

a Determined by addition of constituents
b Gravimetric determination.
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Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	(Cont'd)					SARINAS VALLEY (Continued)																
A. Lanini Irrigation well	14S/3E-30E1	7-24-55		1710	7.8	139 / 6.94	55 / 4.52	135 / 5.87	6.0 / 0.15	0 / 0.00	431 / 7.06	168 / 3.50	247 / 6.97	8.8 / 0.14	0.2 / 0.01	0.23	39	1010	34	573	290	USGS
		9-5-56	66	1470	7.7	69 / 3.44	58 / 4.77	145 / 6.31	4.7 / 0.12	0 / 0.00	226 / 3.70	180 / 3.75	259 / 7.28	11 / 0.18	0.1 / 0.01	0.18	45	832	43	411	216	DWR
Irrigation well	14S/3E-30F1	7-24-55		1460	7.8	119 / 5.94	45 / 3.68	128 / 5.57	4.6 / 0.12	0 / 0.00	466 / 7.67	78 / 1.62	203 / 5.72	12 / 0.19	0.2 / 0.01	0.25	39	857	36	481	102	USGS
		9-4-56	64.5	1230	7.5	53 / 2.64	49 / 4.03	126 / 5.48	4.4 / 0.11	0 / 0.00	258 / 4.23	90 / 1.87	217 / 6.12	17 / 0.27	0.1 / 0.01	0.08	41	725	45	333	122	DWR
P. G. & E. Company Municipal well	14S/3E-33H1	8-12-55		612	7.6	44 / 2.20	20 / 1.62	47 / 2.04	2.7 / 0.07	0 / 0.00	172 / 2.82	30 / 0.62	83 / 2.34	2.4 / 0.04	0.3 / 0.02	0.04	42	356	34	191	50	USGS
		9-5-56	68	617	8.0	46 / 2.30	21 / 1.73	46 / 2.00	3.2 / 0.08	0 / 0.00	174 / 2.85	36 / 0.75	88 / 2.49	4.2 / 0.07	0.1 / 0.01	0.00	47	378	33	200	71	DWR
James F. Dolan Irrigation well	15S/2E-1A1	7-28-55		1840	7.6	205 / 10.23	68 / 5.59	124 / 5.39	6.3 / 0.16	0 / 0.00	380 / 6.23	465 / 9.68	175 / 4.94	1.2 / 0.02	0.1 / 0.01	0.31	39	1270	25	791	479	USGS
		9-17-56	66	1710	7.5	157 / 7.83	69 / 5.67	112 / 4.87	5.7 / 0.15	0 / 0.00	210 / 3.44	493 / 10.26	182 / 5.13	1.1 / 0.02	0.5 / 0.03	0.33	51	1170	26	677	503	DWR
Lee Hicks Irrigation well	15S/2E-2A1	7-26-55		1060	8.0	120 / 5.99	42 / 3.49	58 / 2.52	3.8 / 0.10	0 / 0.00	391 / 6.41	186 / 3.87	64 / 1.80	0 / 0.00	0.1 / 0.01	0.12	43	710	21	474	153	USGS
		9-12-56	64.5	854	7.8	61 / 3.04	42 / 3.45	52 / 2.26	3.8 / 0.10	0 / 0.00	216 / 3.52	173 / 3.71	60 / 1.95	0.4 / 0.01	0.3 / 0.02	0.18	51	564	26	324	144	DWR
D. P. McFadden, et. al. Irrigation well	15S/3E-11	7-26-55		1700	7.8	163 / 8.13	58 / 4.75	140 / 6.09	5.8 / 0.15	0 / 0.00	490 / 8.03	266 / 5.54	168 / 4.74	22 / 0.35	0.2 / 0.01	0.32	38	1100	32	644	242	USGS
		8-23-56	64.5	1730	7.3	160 / 7.98	61 / 5.02	143 / 6.22	5.3 / 0.14	0 / 0.00	500 / 8.19	279 / 5.81	170 / 4.80	84 / 1.35	0.2 / 0.02	0.26	46	1190	32	649	241	DWR
Teresa Storm Irrigation well	15S/3E-5K3	8-15-55		2060	7.7	127 / 6.64	73 / 5.97	217 / 9.44	7.4 / 0.19	0 / 0.00	328 / 5.38	487 / 10.14	241 / 6.80	1.2 / 0.02	0.1 / 0.01	0.61	37	1360	42	640	372	USGS
		8-23-56	62.8	2300	7.3	180 / 9.38	75 / 6.17	226 / 9.83	6.8 / 0.17	0 / 0.00	494 / 8.10	513 / 10.68	252 / 7.11	0.3 / 0.00	0.2 / 0.01	0.72	41	1550	38	778	373	DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analyses by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M					SALINAS VALLEY (Continued)																
T. & M. Yuki Irrigation well	15S/3E-6L1	7-28-55		1850	7.5	201 / 10.03	77 / 6.31	109 / 4.74	6.0 / 0.15	0 / 0.00	336 / 5.51	530 / 11.03	165 / 4.65	1.2 / 0.02	0.0 / 0.00	0.29	37	1290	22	817	541	USGS
		8-24-56	64.5	1870	7.4	210 / 10.48	74 / 6.09	100 / 4.35	5.7 / 0.15	0 / 0.00	356 / 5.83	527 / 10.97	165 / 4.65	0.4 / 0.01	0.2 / 0.01	0.30	46	1300	21	829	537	DWR
F. Giottinini Domestic and Irrigation well	15S/3E-7D1	7-26-55		1360	8.1	148 / 7.39	54 / 4.41	80 / 3.48	4.7 / 0.12	0 / 0.00	329 / 5.39	300 / 6.25	118 / 3.33	0.6 / 0.00	0.1 / 0.01	0.19	39	906	23	590	320	USGS
		9-11-56	64.5	1210	7.4	108 / 5.39	51 / 4.19	75 / 3.26	4.3 / 0.11	0 / 0.00	223 / 3.66	297 / 6.18	116 / 3.27	0.7 / 0.01	0.3 / 0.02	0.19	48	810	25	480	2[illegible]	DWR
Laura G. Foster Irrigation well	15S/3E-8N1	7-26-55		1130	8.3	119 / 5.94	44 / 3.62	77 / 3.35	4.8 / 0.12	4 / 0.13	349 / 5.72	248 / 5.16	70 / 1.97	0.0 / 0.00	0.1 / 0.01	0.22	33	772	26	478	185	USGS
Spreckles Sugar Co Irrigation well	15S/3E-16M1	8-10-55		949	8.0	109 / 5.44	39 / 3.18	45 / 1.96	3.4 / 0.09	0 / 0.00	329 / 5.39	162 / 3.37	57 / 1.61	0.0 / 0.00	0.2 / 0.01	0.13	38	616	18	431	161	USGS
J. Violini Irrigation well	15S/3E-20D1	7-25-55		1290	7.4	127 / 6.34	52 / 4.24	97 / 4.22	5.9 / 0.15	0 / 0.00	679 / 11.13	30 / 0.62	94 / 2.65	0.2 / 0.00	0.3 / 0.02	0.15	45	786	28	529	0	USGS
E. Bedolla Irrigation well	16S-4E-12R1	7-15-55		2060	7.6	161 / 8.03	76 / 6.21	194 / 8.44	5.4 / 0.14	0 / 0.00	382 / 6.26	454 / 9.45	205 / 5.78	47 / 0.76	0.3 / 0.02	0.67	37	1370	37	712	39[illegible]	USGS
K. R. Nutting Irrigation well	16S/4E-24B1	7-15-55		1580	7.6	154 / 7.68	61 / 5.04	120 / 5.22	3.6 / 0.09	0 / 0.00	335 / 5.49	382 / 7.95	120 / 3.38	33 / 0.53	0.3 / 0.02	0.44	37	1080	29	636	361	USGS
		8-10-56	64.5	2070	7.3	167 / 8.33	71 / 5.93	198 / 8.61	5.0 / 0.13	0 / 0.00	382 / 6.23	484 / 10.08	203 / 5.73	111 / 1.79	0.3 / 0.02	0.61	46	1470	37	709	40[illegible]	DWR
J. C. Tadesalman Irrigation well	16S/4E-25L1	7-15-55		1520	7.9	163 / 8.13	61 / 4.99	109 / 4.74	4.2 / 0.11	0 / 0.00	514 / 8.42	314 / 6.54	81 / 2.28	0.0 / 0.00	0.2 / 0.01	0.36	36	1020	26	656	235	USGS
		8-10-56	61	1610	7.5	170 / 8.48	66 / 5.43	108 / 4.70	4.7 / 0.12	0 / 0.00	539 / 8.83	363 / 7.56	93 / 2.62	0.4 / 0.01	0.4 / 0.02	0.46	46	1120	25	697	254	DWR
Irrigation well	17S/6E-27K1	7-14-55		1510	7.7	132 / 6.59	60 / 4.93	120 / 5.22	3.6 / 0.09	0 / 0.00	296 / 4.85	375 / 7.81	125 / 3.52	4.3 / 0.07	0.2 / 0.01	0.40	37	1000	31	576	333	USGS
		7-26-56	64	1510	7.0	136 / 6.79	61 / 5.02	117 / 5.09	3.2 / 0.08	0 / 0.00	320 / 5.24	397 / 8.27	127 / 3.58	4.0 / 0.06	0.1 / 0.01	0.31	37	1040	30	592	334	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as CaC: Total ppm	Hardness as CaC: NC ppm	Analyzed by [c]
	M.D.B.&M.					SALINAS VALLEY (Continued)																
Mart Baker Irrigation well	17S/6E-25F1	8-9-55		1560	7.5	125 / 6.24	66 / 5.44	133 / 5.79	4.2 / 0.11	0 / 0.00	271 / 4.44	444 / 9.24	114 / 3.21	0.0 / 0.00	0.3 / 0.02	0.67	37	1060	33	584	362	USGS
		7-20-56	64.5	1610	7.3	129 / 6.44	71 / 5.84	136 / 5.87	4.0 / 0.10	0 / 0.00	271 / 4.44	477 / 9.93	121 / 3.41	0.9 / 0.14	0.3 / 0.02	0.53	43	1110	32	613	392	DWR
L. [illegible] & V. Jacks Irrigation well	18S/6E-1M1	7-13-55		1220	7.5	112 / 5.59	34 / 2.83	112 / 4.87	5.4 / 0.14	0 / 0.00	312 / 5.11	284 / 5.91	68 / 1.92	10 / 0.16	0.2 / 0.01	0.56	34	814	36	421	165	USGS
		7-26-56	63.5	1110	7.8	102 / 5.09	32 / 2.63	89 / 3.87	5.3 / 0.14	0 / 0.00	290 / 4.75	257 / 5.35	64 / 1.81	9.2 / 0.15	0.2 / 0.01	0.43	39	741	33	387	149	DWR
L. Jacks Irrigation well	18S/6E-2N1	7-13-55		1200	7.6	155 / 7.73	37 / 3.08	58 / 2.52	5.3 / 0.14	0 / 0.00	294 / 4.82	282 / 5.87	66 / 1.86	27 / 0.44	0.0 / 0.0	0.14	31	806	19	540	299	USGS
		7-26-56	61	1140	7.2	142 / 7.09	37 / 3.04	57 / 2.48	4.8 / 0.12	0 / 0.00	302 / 4.95	262 / 5.45	61 / 1.72	38 / 0.61	0.2 / 0.01	0.0	38	789	19	509	259	DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), [illegible]

ANALYSES OF GROUND WATER

a Determination by addition of constituents

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million												Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$		Analyzed by [c]
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	NC ppm	
						equivalents per million																
	MORAN					CARMEL VALLEY																
Hudson & Fuller	16S/1W-13J1	6-22-55	62	823	7.6	79 / 3.94	24 / 1.94	63 / 2.74	4.3 / 0.11	0 / 0.00	262 / 4.29	111 / 2.31	76 / 2.14	1.2 / 0.02	0.4 / 0.02	0.03	30	518	31	294	79	USGS
		10-3-55	61	821				56 / 2.44					78 / 2.20							295		USGS
		7-10-56	62	795				59 / 2.58					79 / 2.22							296		DWR
R. Odello Irrigation well	16S/1W-13L1	6-22-55	61	654				50 / 2.17					54 / 1.52							221		USGS
		10-20-55	62	638				50 / 2.18					53 / 1.49							217		USGS
B. Odello Irrigation well	16S/1W-13Q1	6-22-55	60.5	824				55 / 2.39					72 / 2.03							304		USGS
		10-20-55	60	827				54 / 2.35					64 / 1.80							319		USGS
		7-10-56	60	787				50 / 2.15					65 / 1.83							300		DWR
B. Odello Irrigation well	16S/1W-13Q2	6-22-55	60	902				66 / 2.87					84 / 2.37							328		USGS
		10-20-55	57	887				64 / 2.78					80 / 2.76							332		USGS
		7-10-56	60	820				63 / 2.75					84 / 2.38							276		DWR
Carmel Valley Dairy Irrigation well	16S/1E-16N1	6-22-55	60	800				50 / 2.17					59 / 1.66							320		USGS
		10-5-55	59	759				48 / 2.09					58 / 1.64							293		USGS
E. & W. Hatton	16S/1E-18F1	10-5-55	61	1010				75 / 3.26					106 / 2.99							146		USGS
		7-10-56	60	852				75 / 3.25					111 / 3.12							266		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR) as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDRW					CARRIL VALLEY(Continued)																
E. & H. Hatton Irrigation well	16S/12E-12R1	7-10-56	60	897				82 / 3.58					122 / 3.44							271		DWR
B. Odello Irrigation well	16S/13E-18P1	6-22-55	58	490	8.2	46 / 2.30	15 / 1.22	32 / 1.39	3.0 / 0.08	0 / 0.00	156 / 2.56	74 / 1.54	34 / 0.96	0.5 / 0.01	0.2 / 0.01	0.01	24	306	28	176	48	USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SEBAN						SALTA	VIEJA	VALLEY													
F. H. Gates Industrial well	9N/32A-7A1	8-1[illegible]-55	69	1050				54 / 2.35					25 / 0.71							484		[illegible]
		11-1-55	62	1040				52 / 2.24					26 / 0.73							482		[illegible]
		9-20-56	62	1017				46 / 2.00					34 / 0.96			.11				464		DWR
R. E. Horswing Domestic well	9N/32A-8A1	8-10-55	78	928				49 / 2.13					24 / 0.68							420		[illegible]
		11-1-55	67	935				47 / 2.04					22 / 0.62							430		DWR
		9-20-56	62	923				41 / 1.78					25 / 0.71			.01				414		DWR
W. E. Low Estate Domestic well	9N/33A-9A1	8-10-55	80	650				85 / 3.70					153 / 4.32							95		USGS
		11-1-55	63	642				91 / 3.94					148 / 4.18							83		DWR
		9-20-56	73	661				88 / 3.83					157 / 4.43			.00				102		DWR
Blockman School Domestic well	9N/33A-12R1	11-1-55	63	1060				60 / 2.62					26 / 0.73							490		DWR
		9-20-56	64	1078				54 / 2.35					30 / 0.85			.11				466		DWR
Mattia Bogmuda Irrigation well	9N/34A-9E1	8-10-55	70	936				86 / 3.74					159 / 4.48							242		USGS
		11-1-55	65	690				65 / 2.83					107 / 3.02							189		DWR
		9-20-56	65	694				64 / 2.78					114 / 3.21			.05				188		DWR
K Dart Irrigation well	10N/34E-16R1	8-10-55	65	1840				114 / 4.90					82 / 2.31							869		USGS
		11-1-55	62	1900				114 / 4.98					75 / 2.12							896		DWR
		9-26-56	66	1902				105 / 4.57					81 / 2.28			.17				928		DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SEB&H					SANTA MARIA VALLEY (Continued)																
LeRoy Irrigation well	10N/34W-17H1	8-11-55	62	1740	7.7	182 / 9.08	90 / 7.40	101 / 4.39	4.3 / 0.11	0 / 0.00	293 / 4.80	663 / 13.80	64 / 1.81	39 / 0.63	0.3 / 0.02	0.26	28	1320	21	824	584	USGS
Union Sugar Co. Irrigation well	10N/34W-19H1	8-10-55	73	1250				79 / 3.44					50 / 1.41							542		USGS
		11-1-55	54	1190				75 / 3.27					43 / 1.21							527		DWR
		9-26-56	65	1242				71 / 3.09					52 / 1.44			.16				534		DWR
Union Sugar Co. Irrigation well	10N/34W-19R1	9-26-56	63	877		54 / 2.35							35 / 0.99			.09				372		DWR
Joseph E. Enos Irrigation well	10N/34W-23R2	8-10-55	67	1620				97 / 4.22					72 / 2.03							754		USGS
A Fernandez Irrigation well	10N/34W-26H2	11-1-55	62	1450				97 / 4.22					52 / 1.47							630		DWR
George Fertusi Irrigation well	10N/34W-28A1	11-1-55	64	1020				54 / 2.34					30 / 0.85							464		DWR
Domestic well	10N/34W-35A1	8-10-55	72	821				46 / 2.00					36 / 1.02							382		USGS
		11-1-55	64	689				48 / 2.07					36 / 1.02							264		DWR
		9-26-56	67	838				64 / 2.78					30 / 1.10			.05				336		DWR
Waller Franklin Seed Co. Irrigation well	10N/35W-9F1	8-11-55	67	2450	7.6	280 / 13.97	114 / 9.39	174 / 7.57	5.4 / 0.14	0 / 0.00	332 / 5.44	1010 / 21.03	148 / 4.17	7.7 / 0.12	0.3 / 0.02	0.39	28	1930	24	1170	898	USGS
		11-1-55	59	2520				184 / 8.00					153 / 4.31							1190		DWR
		9-26-56	67	2186				163 / 7.09					150 / 4.23			.23				1126		DWR
Agnes F. King Irrigation well	10N/35W-9N1	8-11-55	63	1900	7.4	204 / 10.18	82 / 6.78	133 / 5.78	4.0 / 0.10	0 / 0.00	302 / 4.95	725 / 15.09	96 / 2.71	7.0 / 0.11	0.3 / 0.02	0.27	36	1440	25	848	600	USGS
		11-1-55	63	2120				153 / 6.64					114 / 3.21							955		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water [illegible]

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	CEBAF					GROUND WATER (Continued)																
M. Menezes Irrig. Dist. well	10N/35W-11C1	8-11-55	62	2440	7.5	272 / 13.52	112 / 9.20	160 / 6.96	5.6 / 0.14	0 / 0.00	365 / 5.98	868 / 18.07	178 / 5.02	31 / 0.50	0.5 / 0.03	0.36	33	1640	23	1140	841	USGS
		11-1-55	63	2160				143 / 6.20					148 / 4.17							1010		DWR
		9-26-56	61	2147				128 / 5.57					167 / 4.71			.37				952		DWR
C. F. Lathrop Irrigation well	10N/35W-21E1	11-1-55	58	1530				122 / 5.32					99 / 2.79							612		DWR
		9-26-56	60	1076				124 / 5.39					117 / 3.30			.22				603		DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	SB&M							SUYMA VALLEY														
R. S. Russel Irrigation well	10N/25W-20H1	8-9-55	73	1990				91 / 3.96					15 / 0.42							1100		USGS
		6-26-56	61	1950				73 / 3.18					14 / 0.39							1090		DWR
E. H. Kettler & Sons Irrigation well	10N/25W-22E1	8-9-55	85	2080				99 / 4.30					18 / 0.51							1160		USGS
		6-26-56	62	2100				86 / 3.75					17 / 0.47							1165		DWR
E. H. Kettler & Sons Irrigation well	10N/25W-22P1	6-26-56	61	1931				85 / 3.7					15 / 0.43							1035		DWR
E. H. Kettler & Sons Irrigation well	10N/25W-23E1	8-9-55	73	1950				148 / 6.44					70 / 1.97							876		USGS
		6-26-56	70	2022				145 / 6.3					78 / 2.20							875		DWR
Adolph Hirschenmann Irrigation well	10N/25W-30F1	8-9-55	81	1760				84 / 3.65					13 / 0.37							942		USGS
		6-26-56	62	2973				112 / 4.88					99 / 2.78							1650		DWR
Irrigation well	10N/25W-30N1	8-9-55	78	1850	8.0	112 / 5.59	171 / 14.08	79 / 3.44	4.3 / 0.11	0. / 0.00	185 / 3.03	937 / 19.51	16 / 0.45	19 / 0.31	0.6 / 0.03	0.20	23	1450	15	984	832	USGS
		11-2-55	58	1895				86 / 3.73					19 / 0.54							1020		DWR
		6-26-56	68	1838				76 / 3.31					20 / 0.56							1005		DWR
Adolph Hirschenmann Irrigation well	10N/25W-30R1	11-2-55	61	2620				148 / 6.43					57 / 1.61							1390		DWR
		6-26-56	67	2869				135 / 5.88					80 / 2.27							1560		DWR
Domestic well	10N/25W-32C1	11-2-55	57	1885				76 / 3.29					23 / 0.93							1030		DWR
Irrigation well	10N/25W-32H1	8-9-55	66	1670				74 / 3.22					14 / 0.39							888		USGS
		6-26-56	62	1657				69 / 3.0					15 / 0.41							870		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analyses by U.S. Geological Survey, Quality of Water Branch (USGS) Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR)

a Determined by addition of constituents

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SE¼NW¼					CUYAMA VALLEY (Continued)																
H. S. Russel Irrigation well	10N/26W-9R2	8-9-55	69	2040				95 / 4.13					22 / 0.62							1140		USGS
		11-3-55	64	2060				86 / 3.75					26 / 0.73							1140		DWR
		6-27-56	65	2008				90 / 3.93					33 / 0.92							1115		DWR
Alternate of 21C1 Irrigation well	10N/26W-21R1	8-9-55	74	1320				124 / 5.39					14 / 0.39							459		USGS
		6-27-56	72	1328				122 / 5.29					14 / 0.40							446		DWR
E. Kirschenmann Irrigation well	10N/26W-22E1	11-2-55	57	2890				151 / 6.58					115 / 3.24							1610		DWR
		6-27-56	72	2357				117 / 5.08					51 / 1.44							1210		DWR
Goehring Brothers Irrigation well	10N/26W-22J1	8-9-55	73	2060				109 / 4.74					18 / 0.51							1080		USGS
E. Kirschenmann Irrigation well	10N/26W-22R1	8-9-55	75	2110				117 / 5.09					18 / 0.51							1100		USGS
Goehring Brothers Irrigation and stock well	10N/26W-23L1	8-9-55	72	1850				93 / 4.04					12 / 0.34							980		USGS
Goehring Brothers Irrigation well	10N/26W-23P1	6-27-56	68	1966				90 / 3.9					23 / 0.64							1055		DWR
Goehring Brothers Irrigation well	10N/26W-23R1	6-27-56	67	2322				106 / 4.6					79 / 2.22							1245		DWR
A. Kirschenmann Irrigation well	10N/26W-24R1	8-9-55	71	2070				95 / 4.13					47 / 1.33							1120		USGS
		11-2-55	57	3480				183 / 7.95					117 / 3.30							1920		DWR
		6-26-56	62	3378				155 / 6.75					103 / 2.9							1855		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SBBRM					CUYAMA VALLEY (Continued)																
W. Smith Irrigation well	10N/27W-11A3	6-27-56	66	3695				287 12.5					62 1.74							1950		DWR
W. Smith Irrigation well	10N/27W-11C1	8-9-55	71	3800				319 13.87					64 1.81							2050		USGS
		6-27-56	66	4098				336 14.6					90 2.54							2175		DWR
W. Smith Stock well	10N/27W-12D1	8-9-55	69	3070				228 9.91					45 1.27							1620		USGS
E. Reich Irrigation well	10N/27W-12J2	8-9-55	68	2970				224 9.74					34 0.96							1550		USGS
		6-27-56	66	2804				195 8.5					34 0.97							1455		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

c Determined by addition of constituents

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SB B&M								CANARD PLAIN													
Ed Murdhardt Irrigation well	1N/21W-30M1	10-25-55	61	1080	8.0	104 / 5.19	31 / 2.57	99 / 4.31	5.2 / 0.13	0 / 0.00	289 / 4.74	298 / 6.20	32 / 0.90	3.0 / 0.05	0.3 / 0.02	0.71	43	758[a]	35	388	151	USGS
		6-8-56	69	1075	7.9						298 / 4.88		39 / 1.10							388		DWR
		12-8-56		1005	7.5	99 / 4.95	35 / 2.87	104 / 4.52	6.6 / 0.17	0 / 0.00	304 / 4.98	295 / 6.15	38 / 1.07	2.4 / 0.04	0.1 / 0.00	1.85	32	784	36.1	391	142	TTL[d]
Naval Air Station Point Mugu Domestic well	1N/21W-31J1	6-11-56	75	960	7.7	83.5 / 4.18	45 / 3.69	86 / 3.73	5.2 / 0.13	0 / 0.00	264 / 4.33	254 / 5.30	67 / 1.89	1.1 / 0.02	0.1 / 0.01	0.0	37	756	31.7	394	177.5	TTL[d]
Naval Air Station Point Mugu Domestic and Irrigation well	1N/21W-31L1	6-8-56	71	1000	8.2	49 / 2.45	34 / 2.79	110 / 4.79	5.0 / 0.128	7 / 0.24	183 / 3.00	254 / 5.29	63 / 1.78	4.0 / 0.07	0.5 / 0.03	0.68	35	675	47	262	100	DWR
City of Oxnard Municipal well	1N/22W-3F4	5-25-55		1360	7.7	156 / 7.8	50 / 4.1	88 / 3.82	4.5 / 0.12	0 / 0.00	280 / 4.6	467 / 9.74	48 / 1.35	22.3 / 0.36	0.9 / 0.05	0.69		1091	24	595	365	DWR
		10-25-55	64	1400	7.7	86 / 4.29	92 / 7.53	102 / 4.44	5.0 / 0.13	0 / 0.00	278 / 4.56	520 / 10.83	49 / 1.38	15 / 0.24	0.7 / 0.04	0.54		1040	27	591	363	USGS
		6-8-56	65	1408	7.4	162 / 8.08	54 / 4.44	93 / 4.05	4.5 / 0.12	0 / 0.00	298 / 4.88	465 / 9.68	52 / 1.49	21.0 / 0.34	0.6 / 0.03	0.56	30	1110	24	625	381	DWR
		12-26-56	68	1420	7.5					0 / 0.00	292 / 4.78		58 / 1.63							600	361	TTL[d]
D. McGrath Estate Company Domestic and Stock well	1N/22W-7D1	12-22-55	59	1208	7.6	120 / 6.0	59 / 3.20	90 / 3.91	3.8 / 0.10	0 / 0.00	250 / 4.10	391 / 8.14	41 / 1.15	0.6 / 0.01	1.1 / 0.06	0.62		912	30	460	255	DWR
		9-14-56		1190	7.5					0 / 0.00	244 / 4.0		37 / 1.05							488	288	DWR
		12-18-56		1150	7.7	116 / 5.80	45 / 3.69	107 / 4.65	4.3 / 0.11	0 / 0.00	250 / 4.10	401 / 8.35	48 / 1.35	0.0 / 0.00	0.6 / 0.03	0.40	28	884	32.6	475	270	TTL[d]
J. A. Alvarez Jr. Irrigation and Domestic well	1N/22W-8K3	10-25-55	64	1220	7.6	128 / 6.39	41 / 3.36	97 / 4.22	4.6 / 0.12	0 / 0.00	255 / 4.18	403 / 8.39	37 / 1.04	1.7 / 0.03	0.8 / 0.04	0.77	35	875	30	488	279	USGS
		6-8-56		1096	8.4	121 / 6.04	45 / 3.70	82 / 3.57	3.8 / 0.10	19 / 0.64	224 / 3.68	389 / 8.10	41 / 1.16	1.0 / 0.02	0.8 / 0.04	0.70	30	895	26.5	487	271	DWR
		12-18-56		1090	7.6					0 / 0.00	254 / 4.17		47 / 1.32							475	266.5	TTL[d]

c Determined by addition of constituents

b Gravimetric determination

c Analyses by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SB&M					OXNARD PLAIN (Continued)																
Ignatius Friedick Domestic and Irrigation well	1N/22W-9Q3	10-25-55		1250	7.5	134 / 6.69	41 / 3.39	92 / 4.00	4.5 / 0.12	0 / 0.00	254 / 4.16	413 / 8.60	38 / 1.07	0.0 / 0.00	0.8 / 0.04	0.83	35	884	28	504	296	USGS
		6-8-56		1225	8.4	128 / 6.39	49 / 4.03	84 / 3.65	3.8 / 0.05	19 / 0.64	224 / 3.68	423 / 8.82	43 / 1.21	1.0 / 0.02	0.9 / 0.05	0.68	30	935	26	522	306	DWR
		12-18-56		1200	7.3					0 / 0.00	252 / 4.13		48 / 1.35							510	303.5	TTL[d]
City of Oxnard Municipal well	1N/22W-15B3	10-25-55	64	1220	7.7	130 / 6.49	42 / 3.44	91 / 3.96	4.5 / 0.12	0 / 0.00	258 / 4.23	408 / 8.49	38 / 1.07	1.9 / 0.03	0.7 / 0.04	0.71		880[a]	28	496	284.5	USGS
		6-8-56		1090	7.7	129 / 6.45	12 / 0.98	99 / 4.30	4.7 / 0.11	0 / 0.00	210 / 3.44	365 / 7.60	45 / 1.27	0.98 / 0.14	0.6 / 0.03	0.25	32	956	36.2	372	200	TTL[d]
		6-8-56		1200	7.7	132 / 6.59	49.8 / 4.08	97 / 4.25	4.3 / 0.11	0 / 0.00	250 / 4.10	445 / 9.25	45 / 1.27	1.4 / 0.02	0.8 / 0.04	0.8	31	932	28.2	534	329	TTL[d]
Santa Clara Water Conservation District Domestic well	1N/22W-18E1	5-25-55		1220	7.5	130 / 6.5	39 / 3.2	88 / 3.82	4.2 / 0.11	0 / 0.00	253 / 4.15	399 / 8.30	41 / 1.15	2.5 / 0.04	0.9 / 0.05	0.75		920	28	485	277.5	DWR
		5-17-56		1240	7.8	127 / 6.35	42.7 / 3.51	86.8 / 3.77	4.0 / 0.11	0 / 0.00	249 / 4.09	408 / 8.50	42.8 / 1.21	1.8 / 0.03	0.6 / 0.03	0.8		917	27.5	493	289.5	PCC
		12-18-56		1145	8.4	76 / 3.80	64 / 5.25	102 / 4.43	5.1 / 0.13	31 / 1.04	139 / 2.28	425 / 8.85	53 / 1.49	0.0 / 0.00	0.6 / 0.03	0.18	19	830	32.5	453	287	TTL[d]
Hollywood By the Sea Mutual Water Company Municipal well	1N/22W-19B3	5-25-55		1100	8.1	122 / 6.1	35 / 2.9	76 / 3.26	3.7 / 0.10	0 / 0.00	247 / 4.05	356 / 7.41	39 / 1.1	4.2 / 0.07	0.9 / 0.05	0.65		834	27	450	247.5	DWR
		12-13-55		1079	7.9	118 / 5.89	37 / 3.04	78 / 3.39	3.7 / 0.10	0 / 0.00	246 / 4.04	349 / 7.27	40 / 1.13	0.5 / 0.01	1.27 / 0.07	0.44		805	27.3	445	243	DWR
		5-17-56		1140	7.9	120 / 5.98	35.8 / 2.94	79.4 / 3.45	3.9 / 0.10	0 / 0.00	253 / 4.14	351 / 7.30	41.5 / 1.17	1.2 / 0.02	0.6 / 0.03	0.72		824	27.7	446	239	PCC
		12-18-56		1090	7.8					0 / 0.00	249 / 4.08		45 / 1.27							438	234	TTL[d]
United States Navy Domestic well	1N/22W-20B1	3-4-55											39 / 1.10									FGL*
		3-11-55											37 / 1.04									FGL*
		10-25-55	66	1120	8.0	122 / 6.09	34 / 2.81	82 / 3.57	5.6 / 0.14	0 / 0.00	247 / 4.05	363 / 7.56	36 / 1.02	4.4 / 0.07	0.6 / 0.03	0.54		809	28	445	242.5	USGS
		5-17-56	67	1150	7.8	119 / 5.93	36.4 / 2.99	80.6 / 3.50	4.9 / 0.13	0 / 0.00	255 / 4.18	351 / 7.30	41.5 / 1.17	6.8 / 0.11	0.4 / 0.02	0.81		827	27.9	446	237	PCC

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

* Fruit Growers Laboratory, Inc. obtained from United Water Conservation District (FGL)

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated
d Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SEB4W					OXNARD PLAIN(Continued)																
Silver Strand Water Company Domestic well	~~1N/22W-20F1~~	1-14-55											168 / 4.74									FGL e
		3-10-55											174 / 4.91									FGL e
Silver Strand Mutual Water Co. Municipal well	1N/22W-20E2	5-25-55		1080	7.8	139 / 6.95	30 / 2.43	87 / 3.75	4.1 / 0.10	0 / 0.00	256 / 4.20	38e / 8.08	39 / 1.1	3.7 / 0.06	0.5 / 0.03	0.52		900	28	469	341	DWR
		12-13-55		1160	8.0	124 / 6.19	33 / 2.71	84 / 3.65	4.5 / 0.12	0 / 0.00	221 / 3.62	364 / 7.59	42 / 1.18	2.5 / 0.04	0.4 / 0.02	0.40		956	28.8	445	334	DWR
		5-17-56		1210	8.0	136 / 6.82	30.6 / 2.52	87.5 / 3.80	4.2 / 0.11	0 / 0.00	[illegible] / 4.18	388 / 8.07	41.5 / 1.17	6.1 / 0.10	0.4 / 0.02	0.55		934	28.6	467	339	PCC
		12-18-56		1200	7.6					0 / 0.00	256 / 4.20		45 / 1.27							473		TTL d
City of Port Hueneme Municipal well	1N/22W-21B1	6-8-55		1041	7.7	125 / 6.24	36.8 / 3.04	74.6 / 3.39	3.76 / 0.10	0 / 0.00	256 / 4.20	360 / 7.51	37 / 1.04	1.5 / 0.02	0.7 / 0.04	0.66	30	877	26.6	464	254	DWR
		10-25-55	66	1120	7.9	126 / 6.29	32 / 2.63	86 / 3.74	4.5 / 0.12	0 / 0.00	242 / 3.97	3.54 / 7.37	32 / 0.90	0.5 / 0.01	0.6 / 0.03	0.71	41	796a	29	446	247.5	USGS
City of Port Hueneme Municipal well	1N/22W-21L1	5-15-55		4440	7.9	836 / 41.8	294 / 24.2	153 / 6.65	9.6 / 0.25	0 / 0.00	58 / 0.95	536 / 11.16	2134 / 60.2	8.5 / 0.14	0.9 / 0.05	0.71		4697	9	3300	3252.5	DWR
City of Port Hueneme Municipal well	1N/22W-21L2	5-25-55		3820	7.6	466 / 23.3	144 / 11.85	130 / 5.66	6.6 / 0.17	0 / 0.00	204 / 3.35	479 / 9.96	982 / 27.7	4.5 / 0.07	0.8 / 0.04	0.66		3261	14	1758	1590.5	DWR
K. L. Karnau Domestic and Irrigation well	1N/22W-23C1	10-25-55	63	1150	7.5	121 / 6.04	37 / 3.07	87 / 3.78	4.7 / 0.12	0 / 0.00	248 / 4.06	370 / 7.70	36 / 1.02	0.0 / 0.00	0.8 / 0.04	0.74	38	817a	29	456	253	USGS
		6-8-56	67	1041	8.4	118 / 5.89	42 / 3.45	80 / 3.48	3.7 / 0.10	12 / 0.40	234 / 3.84	370 / 7.70	39 / 1.10	1.0 / 0.02	0.8 / 0.04	0.68	33	840	27	467	255	DWR
		12-18-56	68	1145	7.4					0 / 0.00	252 / 4.13		49 / 1.38							408	201.5	TTL d
S. R. Pidduck Irrigation & Domestic well	1N/22W-26A1	12-22-55	55	1145	7.8	122 / 6.1	35 / 2.84	86 / 3.76	4.5 / 0.12	0 / 0.00	262 / 4.30	355 / 7.40	39 / 1.10	1.6 / 0.03	1.0 / 0.06	0.58		865	29.3	447	232	DWR
		6-8-56	66	1042	7.7	124 / 6.19	38 / 3.12	80 / 3.48	3.8 / 0.10	0 / 0.00	264 / 4.32	346 / 7.20	40 / 1.13	1.0 / 0.02	1.0 / 0.05	0.24	30	865	27	466	250	DWR
		12-18-56	68	1090	7.3					0 / 0.00	256 / 4.20		48 / 1.35							454	244	TTL d

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.
d Terminal Testing Laboratory (TTL)
e Fruit Growers Laboratory, Inc. obtained from United Water Conservation District (FGL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					CANARD PLAIN (Continued)																
R. E. Lown Domestic & Irrigation well	1N/22W-28A2	5-25-55		1000	7.8	120 / 6.0	29 / 3.2	86 / 3.72	3.9 / 0.10	0 / 0.00	256 / 4.2	358 / 7.45	41 / 1.15	2.9 / 0.05	0.9 / 0.03	0.72		899	29	460	250	DWR
		10-25-55	59	1140	8.0	118 / 5.89	39 / 3.17	96 / 4.18	4.6 / 0.12	0 / 0.00	262 / 4.29	364 / 7.58	36 / 1.02	0.2 / 0.01	0.8 / 0.04	0.81	32	820[a]	31	453	238.5	USGS
		5-17-56		1180	8.0	117 / 5.84	38.1 / 3.13	88.6 / 3.85	3.9 / 0.10	0 / 0.00	264 / 4.33	361 / 7.53	43.2 / 1.22	4.3 / 0.07	0.7 / 0.04	0.90		834	29.8	449	232.5	PCC
		12-18-56		1200	7.7					0 / 0.00	262 / 4.29		49 / 1.38							458	243.5	TTL[d]
Kalop Pulp and Paper Company Industrial and Domestic well	1N/22W-28H2	5-15-56		1200	8.1	122 / 6.08	41.6 / 3.42	85.9 / 3.73	4.2 / 0.11	0 / 0.00	258 / 4.23	367 / 7.65	47.5 / 1.34	1.2 / 0.02	0.6 / 0.03	0.61		919	28	475	263.5	PCC
		12-18-56		1150	7.7	116 / 5.80	45 / 3.69	107 / 4.65	4.3 / 0.11	0 / 0.00	250 / 4.10	401 / 8.35	48 / 1.35	0.0 / 0.00	0.6 / 0.03	0.4	28	884	32.5	474.5	269.5	PCC

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	SEB&H				WEST COAST BASIN-AREA OF SEA WATER INTRUSION																	
California Water Service Company Municipal well	3S/14W-31A1	5-26-55	68	832	7.9	76 / 3.8	17.4 / 1.44	6.30 / 2.74	5.3 / 0.14	0 / 0.00	248 / 4.06	45.2 / 0.94	112 / 3.15	0.0 / 0.00	0.2 / 0.01	0.05	25	468	33.7	262	59	PCC
		5-21-56		785	7.8	72 / 3.6	16 / 1.35	66 / 2.87	5.7 / 0.15	0 / 0.00	256 / 4.2	43 / 0.89	96 / 2.7	7.5 / 0.12	0.2 / 0.01	0.0		496	36	248	38	DWR
City of El Segundo Municipal well	3S/15E-12G1	11-2-55		1220	7.3	102 / 5.1	23 / 1.9	117 / 5.08	7.5 / 0.19	0 / 0.00	366 / 6.0	19 / 0.39	213 / 6.0	5.5 / 0.09	0.2	0.21		755	41	350	86.5	DWR
		10-24-56	62	1384	7.9	94 / 4.70	38 / 3.10	121 / 5.25	7.4 / 0.19	0 / 0.00	293 / 4.80	16 / 0.33	285 / 8.05	1.1 / 0.02	0.2 / 0.01	0.0		804	40	390	150	DWR
City of El Segundo Municipal well	3S/15W-12H3	5-25-55	71	915	7.7	63 / 3.15	23.4 / 1.93	92 / 4.00	7.0 / 0.18	0 / 0.00	414 / 6.78	Tr / Tr	85.7 / 2.42	5.0 / 0.08	0.2 / 0.01	0.22	30	507	43.2	254	0	PCC
Standard Oil Company of California Industrial well	3S/15W-13R2	5-26-55	71	1430	7.6	122 / 6.10	36.5 / 3.02	100 / 4.34	8.4 / 0.22	0 / 0.00	301 / 4.94	70.5 / 1.47	256 / 7.23	3.1 / 0.05	0.2 / 0.01	0.18	30	873	31.6	456	209	PCC
		11-9-55		1477	7.6	128 / 6.39	42 / 3.45	105 / 4.57	9.0 / 0.23	0 / 0.00	298 / 4.88	80 / 1.66	279 / 7.87	1.7 / 0.03	0.7 / 0.04	0.16		1125	31.2	492	248	DWR
		5-14-56		1135	7.9	62 / 3.10	30 / 2.45	107 / 4.65	9.0 / 0.23	0 / 0.00	226 / 3.7	1 / 0.02	239 / 6.75	4.9 / 0.08	0.1 / 0.01	0.12		732	45	278	93	DWR
		10-24-56	68	1235	7.7	68 / 3.40	38 / 3.10	105 / 4.58	7.5 / 0.19	0 / 0.00	229 / 3.75	9 / 0.19	262 / 7.4	8.1 / 0.13	0.2 / 0.01	0.0		728	40	330	142.5	DWR

o Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					WEST COAST BASIN-TORRANCE AREA																
Ray Boley Domestic well	4S/13W-6K1	5-26-55		1032	7.8	101 / 5.05	23.4 / 1.93	89 / 3.87	4.6 / 0.12	0 / 0.00	216 / 3.54	205 / 4.28	114 / 3.22	1.2 / 0.02	0.1 / 0.01	0.10	17	713	35.2	349	172	PCC
		10-16-56		1200	7.9	108.8 / 5.44	26.2 / 2.15	102.4 / 4.45	5.1 / 0.13	0 / 0.00	241.6 / 3.96	262 / 5.46	106 / 2.99	0.6 / 0.01	0.1 / 0.01	0.1	27	820	36.6	385	187	TTL [d]
George Branning Domestic & Stock well	4S/13W-6Q1	10-23-56		1950	7.2	181 / 9.05	41 / 3.37	201 / 8.75	6.1 / 0.16	0 / 0.00	346 / 5.7	471 / 9.82	195 / 5.5	5.3 / 0.09	0.4 / 0.02	0.29		1327	41.1	621	336	DWR
Chanslor Canfield Midway Oil Co. Industrial well	4S/14W-9K1	11-3-55	70	723	7.5	42 / 2.10	12 / 0.99	105 / 4.57	4.8 / 0.12	0 / 0.00	273 / 4.48	3 / 0.06	118 / 3.33	0.3 / 0.01	0.2 / 0.01	0.26		417	58.8	155	0	DWR
		10-22-56		638	7.5	40 / 2.0	10 / 0.80	83 / 3.62	3.9 / 0.10	0 / 0.00	268 / 4.40	1 / 0.02	78 / 2.20	2.2 / 0.04	0.2 / 0.01	0.29		370	54	140	0	DWR
		6-26-56		660	8.2	43 / 2.15	13.6 / 1.11	72 / 3.14	5.8 / 0.15	0 / 0.00	262 / 4.30	2.9 / 0.06	84 / 2.37	0.0 / 0.0	0.14 / 0.01	0.2	21	408	48	163	0	TTL [d]
City of Torrance Domestic & Irrigation well	4S/14W-16L2	11-3-55	76	662	7.4					0 / 0.00	317 / 5.20		82 / 2.31							123	0	DWR
		5-14-56		710	7.5	32 / 1.6	11 / 0.9	112 / 4.85	6.2 / 0.16	0 / 0.00	323 / 5.3	1 / 0.02	78 / 2.2	5.9 / 0.10	0.1 / 0.01	0.12		448	65	125	0	DWR
		10-22-56	74	733	7.3					0 / 0.00	323 / 5.3		82 / 2.3							127	0	DWR
Edw. Sidabotham & Son Industrial well	4S/14W-35E1	10-22-56	65	1054	7.0					0 / 0.00	381 / 6.24		139 / 3.92							295	0	TTL [d]
Chandler's Palos Verdes Sand & Gravel Co. Industrial & Domestic well	4S/14W-35F2	5-22-56		1400	7.4	107 / 5.35	33 / 2.75	154 / 6.71	7.5 / 0.19	0 / 0.00	366 / 6.0	182 / 3.80	174 / 4.90	6.3 / 0.10	0.1 / 0.01	0.28		920	45	405	105	DWR
		10-22-56		1290	7.3	87 / 4.35	32 / 2.62	159 / 6.91	8 / 0.21	0 / 0.00	381 / 6.25	142 / 2.96	169 / 4.76	0.0 / 0.0	0.2 / 0.01	0.35	24	816	49	349	36.5	TTL [d]

a Determined by addition of constituents

b Gravimetric determination.

c Analyses by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

a Determined by addition of constituents
b Gravimetric determination

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SBE&M					WEST COAST BASIN-ATHENS AREA																
Arnold Mueller Domestic & Irrigation well	3S/14W-19K1	5-26-55		823	7.9	44.0 / 2.20	13.2 / 1.09	96.6 / 4.20	3.0 / 0.08	0 / 0.00	176 / 2.89	19.2 / 0.40	123 / 3.46	45.2 / 0.73	0.1 / 0.01	0.11	25	465	55.5	165	20.5	PCC
		5-21-56		886	7.8	48 / 2.4	16 / 1.25	108 / 4.71	3.7 / 0.09	0 / 0.00	183 / 3.0	30 / 0.63	135 / 3.8	70.0 / 1.13	0.0 / 0.0	0.15		531	56	182	32	DWR
		10-22-56		912	7.5					0 / 0.00	189 / 3.1		138 / 3.9							200	45	DWR
Park Water Company Municipal well	3S/14W-22B2	5-26-55		1730	7.6	146 / 7.30	37.8 / 3.12	118 / 5.14	5.9 / 0.16	0 / 0.00	192 / 3.14	65.2 / 1.36	403 / 11.38	2.5 / 0.04	0.3 / 0.02	0.10	20	1170	32.7	521	364	PCC
		6-22-55		1053	7.6	101 / 5.04	29 / 2.38	92 / 4.00	5.0 / 0.13	0 / 0.00	190 / 3.12	48 / 0.99	246 / 6.94	3.5 / 0.56	0.4 / 0.02	0.28	25	840	34.6	370	214	DWR
		11-4-55		1482	7.4	128 / 6.4	32 / 2.60	104 / 4.52	5.4 / 0.14	0 / 0.00	195 / 3.2	39 / 0.81	349 / 9.85	1.7 / 0.03	0.4 / 0.02	0.06		985	33	450	290	DWR
		5-22-56		987	8.05	90 / 4.5	23 / 1.9	71 / 3.09	5.0 / 0.13	0 / 0.00	207 / 3.4	52 / 1.08	183 / 5.15	6.8 / 0.11	0.1 / 0.01	0.05		715	32	320	150	DWR
Southern California Water Co. Municipal well	3S/14W-23L1	11-4-55		982	7.8	35 / 1.75	12 / 0.99	185 / 8.05	4.4 / 0.12	0 / 0.00	156 / 2.56	283 / 5.89	95 / 2.68	1.0 / 0.02	0.5 / 0.03	0.12		707	74	137	9	DWR
		5-12-56		535	8.05	50 / 2.50	12 / 1.00	43 / 1.87	4.2 / 0.11	0 / 0.00	192 / 3.26	52 / 1.09	28 / 0.80	9.4 / 0.15	0.3 / 0.02	0.07		346	35	175	12	DWR
		10-26-56		600	7.4	51 / 2.55	15 / 1.23	54 / 2.35	4 / 0.09	0 / 0.00	239 / 3.92	66 / 1.38	37 / 1.04	0.0 / 0.00	0.5 / 0.03			348	38	189	0	TTL d

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M				CENTRAL COASTAL PLAIN-PRESSURE AREA																	
Los Angeles Department of Water & Power Municipal well	2S/13W-32C2	7-13-56	68	510	7.8	58.8 / 2.94	15.8 / 1.30			0 / 0.00	236.7 / 3.86		24.8 / 0.70							212	18	TTL[d]
City of Southgate Municipal well	3S/13W-2B1	5-26-55	68	712	7.95	77.0 / 3.85	15.6 / 1.28	51.1 / 2.22	3.5 / 0.09	0 / 0.00	255 / 4.18	108 / 2.26	50.4 / 1.42	0.0 / 0.0	0.4 / 0.02	0.10	18	485	28	287	78	PCC
		11-28-55		558	7.6	66 / 3.3	9.4 / 0.78	39 / 1.70	2.0 / 0.05	0 / 0.00	247 / 4.05	49 / 1.03	28 / 0.8	8.7 / 0.14	0.7 / 0.04	0.0		353	29	204	1.5	DWR
		6-29-56	66	777	7.5	88 / 4.40	18 / 1.45	57 / 2.48	5.2 / 0.13	0 / 0.00	275 / 4.5	117 / 2.44	53 / 1.50	3.0 / 0.05	0.8 / 0.04	0.15		497	29	292	67	DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SBB&M					LOS ANGELES-FOREBAY AREA																
City of Vernon Municipal well	2S/13W-10P4	6-24-55	67	645	8.2	73 / 3.65	18 / 1.50	65 / 2.84	3.5 / 0.09	0 / 0.00	308 / 5.05	99 / 2.06	32 / 0.9	6.1 / 0.10	0.5 / 0.03	0.26	1.3	450	35	258	5.0	DWR
		11-28-55		815	7.6	88 / 4.39	21 / 1.73	50 / 2.18	3.8 / 0.10	0 / 0.00	259 / 4.24	115 / 2.40	52 / 1.47	13 / 0.21	0.4 / 0.02	0.16		522	26	306	94	DWR
		6-29-56	64	672	7.7	74 / 3.7	26 / 2.15	48 / 2.10	3.6 / 0.09	0 / 0.00	247 / 4.05	99 / 2.06	34 / 0.95	4.8 / 0.08	0.2 / 0.01	0.16		433	39	293	90	DWR
		12-17-56	67	680	7.6					0 / 0.00	244 / 4.00		45 / 1.27							255	133	TTL d
City of Vernon Municipal well	2S/13W-14H1	6-24-55	67	532	7.6	58 / 2.9	15 / 1.2	45 / 1.97	2.9 / 0.08	0 / 0.00	229 / 3.75	76 / 1.58	27 / 0.75	3.2 / 0.05	0.9 / 0.05	0.20	1.3	371	32	205	17.5	DWR
		11-28-55		565	7.7					0 / 0.00	220 / 3.60		25 / 0.71							196	16	DWR
Pioneer Paper Company Industrial well	2S/13W-15N3	6-24-55	68	581	7.6	64 / 3.2	17 / 1.4	41 / 1.80	3.2 / 0.08	0 / 0.00	229 / 3.75	93 / 1.93	23 / 0.65	3.4 / 0.06	1.1 / 0.06	0.13	1.2	404	28	230	42.5	DWR
		12-21-55		559	7.7					0 / 0.00	232 / 3.80		28 / 0.79							238	48	DWR
Southern California Water Co. Municipal well	2S/13W-28H2	11-28-55		1431	7.2					0 / 0.00	390 / 6.40		100 / 2.82							638	318	DWR
		12-17-56	78	1035	7.7	112 / 5.60	42 / 3.44	90 / 3.91	4.7 / 0.12	0 / 0.00	268 / 4.40	352 / 7.33	50 / 1.41	0.7 / 0.01	0.6 / 0.03	0.28	28	896	30	452	0	TTL d

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					MAIN SAN GABRIEL BASIN																
Baldwin Park County Water District Domestic and Irrigation well	1S/10W-7A1	5-25-55		495	7.7	68 / 3.40	13.2 / 1.09	10.8 / 0.47	3.5 / 0.09	0 / 0.00	199 / 3.26	35.1 / 0.73	220 / 0.62	22.9 / 0.37	0.3 / 0.02	0.0	15	326	9.4	225	62	PCC
		7-3-56	65	701	7.9	86 / 4.29	25 / 2.06	11 / 0.48	4.2 / 0.11	0 / 0.00	244 / 4.00	43 / 0.90	69 / 1.95	8.2 / 0.13	0.3 / 0.02	0.02	15	499	6.9	315	115	DWR
		12-27-56		632	8.0					0 / 0.00	241 / 3.95		74 / 2.09							335	137.5	DWR
Glendora Independent Water Co. Domestic & Irrigation well	1S/10W-10C1	5-25-55		609	7.7	76.0 / 3.80	17.4 / 1.44	19.8 / 0.86	3.1 / 0.08	0 / 0.00	236 / 3.86	39.4 / 0.82	20.9 / 0.59	63.7 / 1.03	0.2 / 0.01	0.0	22	403	13.9	262	69	PCC
		11-23-55		539	7.7					0 / 0.00	234 / 3.84		15 / 0.42							268	76	DWR
		7-3-56	66	576	8.1					0 / 0.00	229 / 3.76		14 / 0.39							261	73	DWR
		12-27-56		522	7.9					0 / 0.00	223 / 3.66		16 / 0.45							251	68	DWR
Baldwin Park Mutual Water Co. Irrigation well	1S/10W-19N1	5-25-55	68	915	7.8	96.0 / 4.80	19.2 / 1.59	61.7 / 2.68	5.5 / 0.15	0 / 0.00	184 / 3.02	199 / 4.15	67.3 / 1.90	14.9 / 0.24	0.2 / 0.01	0.10	15	615	29.0	320	169	PCC
		11-23-55		1104	7.6	100 / 4.99	24 / 1.97	100 / 4.35	5.8 / 0.15	0 / 0.00	144 / 2.36	317 / 6.61	94 / 2.65	3.5 / 0.06	0.3 / 0.02	0.16		749	38.0	348	227	DWR
		7-3-56	65	960	7.6	89 / 4.45	19 / 1.55	89 / 3.87	3.5 / 0.09	0 / 0.00	165 / 2.70	239 / 4.99	74 / 2.10	9.0 / 0.15	0.6 / 0.03	0.02		630	39.0	300	165	DWR
		12-27-56		1377	7.7	103 / 5.14	33 / 2.71	115 / 5.00	6.3 / 0.16	0 / 0.00	154 / 2.52	357 / 7.44	113 / 3.19	1.5 / 0.02	0.6 / 0.03	0.14	15	870	38.4	393	267	DWR
City of Monrovia Municipal well	1S/11W-2G1	6-24-55	65	475	7.1	62 / 3.1	17 / 1.4	15 / 0.66	1.2 / 0.03	0 / 0.00	207 / 3.4	41 / 0.85	12 / 0.35	33.2 / 0.54	0.8 / 0.04	0.08	1.2	346	13	225	55	DWR
		7-2-56	64	464	8.3					12 / 0.40	205 / 3.36		13 / 0.37							220	32	DWR
		12-27-56		432	7.9					0 / 0.00	223 / 3.66		14 / 0.39							216	33	DWR
Southern California Water Co. Municipal well	1S/11W-10F1	6-24-55	62	308	7.2	48 / 2.4	10 / 0.84	12 / 0.53	1.1 / 0.027	0 / 0.00	186 / 3.05	13 / 0.27	5 / 0.15	12.4 / 0.20	0.7 / 0.037	0.06		245	14	162	9.5	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

a Determined by addition of constituents

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SBB&M					MAIN SAN GABRIEL BASIN (Continued)																
Southern California Water Co. Municipal well	1S/11W-10F1	11-23-55	60	363	7.7					0 / 0.00	188 / 3.08		7 / 0.20							163	9	DWR
		7-2-56		364	7.4					0 / 0.00	198 / 3.24		9 / 0.25							164	2	DWR
		12-27-56		326	7.8					0 / 0.00	193 / 3.17		10 / 0.28							163	4.5	DWR
Herbert Mutual water Co. Domestic well	1S/11W-14M1	5-25-55		334	7.8	45.0 / 2.25	9.5 / 0.79	7.8 / 0.34	2.8 / 0.07	0 / 0.00	166 / 2.73	12.0 / 0.25	9.9 / 0.28	8.1 / 0.13	0.3 / 0.02	0.0	15	180	9.9	152	15.5	PCC
San Gabriel Valley Water Co. Municipal and Industrial well	1S/11W-26K1	5-25-55		586	7.75	80.0 / 4.00	15.0 / 1.24	17.0 / 0.74	4.2 / 0.11	0 / 0.00	235 / 3.86	50.8 / 1.06	24.5 / 0.69	33.5 / 0.54	0.2 / 0.01	0.0	16	390	13	262	69	PCC
		12-27-56		606	7.7					0 / 0.00	236 / 3.87		26 / 0.73							269	75.5	DWR
Pedro Mireles Irrigation well	1S/11W-32C1	11-23-55		666	7.7					0 / 0.00	305 / 5.00		25 / 0.71							334	84	DWR
		7-2-56	68	706	7.7					0 / 0.00	325 / 5.32		25 / 0.71							347	81	DWR
		12-26-56		647	7.5					0 / 0.00	318 / 5.21		27 / 0.76							347	86.5	DWR
A. Alluis Domestic well	1S/11W-33P1	5-25-55		547	7.6	78.0 / 3.94	13.1 / 1.08	17.0 / 0.74	4.0 / 0.11	0 / 0.00	264 / 4.33	48.0 / 1.00	19.5 / 0.55	3.7 / 0.06	0.2 / 0.01	0.05	15	343	12.6	251	34.5	PCC
		11-23-55		536	7.7					0 / 0.00	264 / 4.32		13 / 0.37							255	39	DWR
		12-27-56		495	7.7					0 / 0.00	256 / 4.19		14 / 0.39							235	25.5	DWR
City of Alhambra Municipal well	1S/12W-10E1	6-24-55	70	368	7.4	34 / 1.7	10 / 0.84	29 / 1.28	1.0 / 0.03	0 / 0.00	156 / 2.55	21 / 0.43	14 / 0.4	23.4 / 0.38	1.2 / 0.06	0.11	1.5	251	33	127	0	DWR
		7-2-56	70	598	7.5					0 / 0.00	195 / 3.20		45 / 1.27							216	56	DWR
		12-26-56		540	7.5					0 / 0.00	191 / 3.13		45 / 1.27							208	51.5	DWR
San Gabriel Valley Water Co. Domestic and Irrigation well	1S/12W-36A3	5-25-55		417	7.6	45.0 / 2.25	11.9 / 0.99	22.5 / 0.98	1.7 / 0.04	0 / 0.00	194 / 3.18	7.2 / 0.15	22.0 / 0.62	16.8 / 0.27	0.6 / 0.03	0.12	24	245	23.0	162	3	PCC
City of Whittier Municipal well	2S/11W-5G1	6-24-55	95	180	6.8	18 / 0.9	5 / 0.45	10 / 0.43	2.3 / 0.06	0 / 0.00	85 / 1.4	16 / 0.33	4 / 0.10	0.9 / 0.01	0.3 / 0.02	0.06	0.4	112	23	168	0	DWR

a Determined by addition of constituents

b Gravimetric determination

c Analyses by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M						UPPER LAKE VALLEY															
Overington Domestic spring	14N/9W-6A2	11-20-56	52	45				2.3 / 0.10					0.0 / 0.00			0.0				14		DWR
U. S. Bureau of Indian Affairs Domestic well	14N/9W-32L2	6-29-55	64	580				14 / 0.61					5.5 / 0.16							298		USGS
California Division of Beaches & Parks—Domestic well	14N/9W-36	10-11-55		441	7.4	20 / 1.00	40 / 3.28	7.4 / 0.32	1.5 / 0.04	0 / 0.00	258 / 4.23	12 / 0.25	5.5 / 0.16	0.0 / 0.00	0.1 / 0.01	0.07	47	261	7	214	2	USGS
C. B. Flick Domestic well	15N/9W-31P1	6-30-55	61	189				15 / 0.65					4.0 / 0.11							69		USGS
		10-7-55	64	165				15 / 0.65					5.5 / 0.15							55		USGS
		11-20-56	61	159				12 / 0.05					3.6 / 0.10			0.05				52		DWR
A. Santos Irrigation well	16N/9W-31L2	6-30-55	57	308				13 / 0.56					8.0 / 0.23							138		USGS
		10-7-55	57	400				15 / 0.65					8.9 / 0.25							184		USGS
		11-19-56	60	385				12 / 0.52					8.8 / 0.25			0.09				174		DWR
Antone Santos Domestic well	16N/9W-31L3	10-7-55	63	267				8.3 / 0.36					7.0 / 0.20							109		USGS
		11-19-56	60	209				8.6 / 0.37					3.7 / 0.10			0.08				82		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

a Determined by addition of constituents

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	MDB&M						KELSEYVILLE VALLEY															
Irrigation well	13N/9W-21Q	6-30-55	60	530				10 / 0.43					10 / 0.28							282		USGS
		10-6-55	58	578				11 / 0.48					14 / 0.39							318		USGS
E. Turner Irrigation well	13N/9W-6C1	6-29-55	61	814				27 / 1.17					19 / 0.54							436		USGS
		10-6-55	64	920				33 / 1.44					21 / 0.59							492		USGS
Lincoln Wright Irrigation well	13N/9W-12R1	6-29-55	63	465				16 / 0.70					18 / 0.51							221		USGS
Merritt Fraser Irrigation well	13N/9W-17D1	6-29-55	67	1120				29 / 1.26					14 / 0.39							624		USGS
Merritt Fraser Domestic well	13N/9W-17D2	10-6-55	62	301				8.1 / 0.35					5.0 / 0.14							144		USGS
		11-20-56	55	413				9.2 / 0.40					6.6 / 0.19			0.14				209		DWR
E. A. Gross Irrigation well	13N/9W-22M1	6-29-55		555				9.8 / 0.43					11 / 0.31							298		USGS
		10-6-55	65	447				9.3 / 0.43					6.5 / 0.18							226		USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SUTTER-YUBA AREA-SACRAMENTO VALLEY																
Domestic well	12N/2E-9Q1	6-30-55	68	641				117 / 5.09					64 / 1.81							76		USGS
		10-5-55	66	638				117 / 5.09					64 / 1.80							73		USGS
		7-31-56	64	633				110 / 4.80					63 / 1.77							69		DWR
Garner Domestic well	12N/2E-11N1	6-30-55	69	1290				231 / 10.04					276 / 7.78							124		USGS
		10-5-55	65	1310				202 / 8.79					280 / 7.90							129		USGS
		7-30-56	65	1301				211 / 9.19					277 / 7.80							133		DWR
Domestic well	12N/2E-14B1	7-30-56		4229				542 / 23.6					1276 / 36.0							764		DWR
L A Wright Domestic well	12N/2E-16R1	6-30-55	72	838				159 / 6.91					58 / 1.64							123		USGS
		10-5-55	65	835				154 / 6.70					56 / 1.58							107		USGS
		7-30-56	65	846				153 / 6.65					53 / 1.50							105		DWR
Haun Domestic well	12N/2E-23Q1	6-30-55	62	960				180 / 7.83					175 / 4.94							76		USGS
		10-5-55	62	960				180 / 7.83					172 / 4.85							76		USGS
		7-30-56	62	989				192 / 8.35					175 / 4.94							84		DWR
Hauper Hoffart Domestic well	12N/2E-26A1	7-30-56	64	1103				198 / 8.62					212 / 5.97							115		DWR
J. W. Saunders Irrigation well	13N/3E-2C1	6-30-55	65.5	979				124 / 5.39					173 / 4.88							222		USGS
J. W. Saunders Irrigation well	13N/3E-3D1	6-30-55	66	1250				41 / 1.78					272 / 7.67							532		USGS

a Determined by addition of constituents.

b Gravimetric determination.

[illegible] Geological Survey, County of Water Branch (USGS), Pacific Chemical Consultants (PCC) [illegible]

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M					SUTTER-YUBA AREA-SACRAMENTO VALLEY (Continued)																
Bridge Investment Domestic well	13N/3E-6M1	6-30-55	62	2520				544 / 23.66					660 / 18.61							32		USGS
		10-4-55	65	2570				528 / 22.97					672 / 18.95							12		USGS
M. D. Clark Irrigation well	13N/3E-7J1	7-18-56		2210									957 / 26.99									DWR
		8-3-56		3320									937 / 26.32									DWR
Roy Rogers Domestic well	13N/3E-10M2	10-4-55	66	955				39 / 1.70					136 / 3.84							415		USGS
		7-30-56	72	1051				49 / 2.15					114 / 3.21							442		DWR
Edward Silva Irrigation well	13N/3E-11Q3	6-30-55	63	1430				91 / 3.96					250 / 7.05							542		USGS
Boccardo Ranch Irrigation well	13N/3E-13C1	6-30-55	60	374				63 / 2.74					28 / 0.79							65		USGS
		10-4-55	62	312				47 / 2.04					14 / 0.40							68		USGS
H. J. Cheim Irrigation well	13N/3E-14R1	6-30-55	66.5	2140				146 / 6.35					545 / 15.37							712		USGS
		10-4-55	65	2580				146 / 6.35					650 / 18.33							949		USGS
Lalsinghrai	13N/3E-16R1	6-30-55	68	1600				92 / 4.00					371 / 10.46							567		USGS
C. Mitchell Irrigation well	13N/3E-23B1	6-30-55	65	3840				178 / 7.74					1090 / 30.74							1530		USGS
C. M. Owen Irrigation well	13N/4E-21A1	6-30-55	62	578				33 / 1.43					10 / 0.28							258		USGS
		10-4-55	62	724				35 / 1.52					8.0 / 0.23							318		USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	NDB&M				SUTTER-YUBA AREA-SACRAMENTO VALLEY (Continued)																	
J. L. Jopson Irrigation well	13N/4E-23Q1	7-1-55	65	196				14 / 0.61					12 / 0.34							70		USGS
		10-4-55	66	202				15 / 0.65					11 / 0.31							71		USGS
		7-30-56	67	225				33 / 1.45					12 / 0.34							62		DWR
Nelson Domestic and Irrigation well	13N/5E-7R3	6-30-55		597				37 / 1.61					33 / 0.93							234		USGS
		10-4-55	71	614				35 / 1.52					30 / 0.85							242		USGS
		7-30-56	69	604				36 / 1.55					32 / 0.91							237		DWR
California Packing Corp. Irrigation well	13N/5E-9R1	6-30-55	67.5	542				54 / 2.35					72 / 2.03							150		USGS
		10-4-55	66	534				49 / 2.13					67 / 1.89							148		USGS
E. J. Gallagher Irrigation well	13N/5E-19R2	7-1-55	67	224				14 / 0.61					16 / 0.45							91		USGS
		10-4-55	67	287				4.0 / 0.17					24 / 0.68							107		USGS
Frye Brothers Domestic well	14N/1E-1A1	7-1-55	68	517				22 / 0.96					14 / 0.39							248		USGS
		10-5-55	66	515				22 / 0.96					14 / 0.39							238		USGS
		7-31-56	68	589				23 / 1.01					15 / 0.44							283		DWR
D. A. McKeehan Domestic well	14N/1E-2A1	7-1-55	72	613				15 / 0.65					23 / 0.65							314		USGS
		10-5-55	64	603				16 / 0.70					21 / 0.59							306		USGS
		7-31-56	64	630				13 / 0.58					19 / 0.54							326		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million (equivalents per million)												Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	NC ppm	
	MDE&M					SUTTER-YUBA AREA-SACRAMENTO VALLEY(Continued)																
T. Hension Irrigation well	14N/3E-3C2	10-3-55	64	1560				52 / 2.26					194 / 5.47							751		USGS
		7-31-56	66	846				48 / 2.10					110 / 3.11							338		DWR
A. A. D. Tom Irrigation well	14N/3E-5A3	6-29-55	65	718				42 / 1.83					36 / 1.02							306		USGS
		10-3-55	64	649				36 / 1.57					23 / 0.65							280		USGS
		7-31-56	64	923				51 / 2.20					48 / 1.36							405		DWR
Littlejohn Irrigation well	14N/3E-14E2	6-30-55	61.5	282				10 / 0.44					2.5 / 0.07							290		USGS
		10-4-55	60	237				8.3 / 0.36					2.0 / 0.06							105		USGS
James A. Elevins Domestic well	14N/3E-15H1	6-30-55	67.5	577	8.1	33 / 1.65	24 / 1.95	59 / 2.57	2.8 / 0.07	0 / 0.00	303 / 4.97	1.6 / 0.03	49 / 1.38	0.2 / 0.00	0.0	0.17	46	365	41	180	0	USGS
		10-3-55	68	886				34 / 1.48					57 / 1.61							419		USGS
F. J. Best Domestic and Irrigation well	14N/3E-16B2	6-29-55	64.5	1810				59 / 2.57					395 / 11.14							754		USGS
		3-10-55	68	1790				72 / 3.13					345 / 9.73							764		USGS
		7-31-56	68	1859				76 / 3.29					363 / 10.24							778		DWR
Rennie Mahon Irrigation well	14N/3E-18A2	6-29-55	66	613				39 / 1.70					26 / 0.73							256		USGS
		10-3-55	66	629				38 / 1.65					26 / 0.73							257		USGS
		7-31-56	66	612				35 / 1.54					25 / 0.70							259		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micramhos at 25°C)	pH	Mineral constituents in parts per million / equivolents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	MDB&M					SUTTER-YUBA AREA-SACRAMENTO VALLEY(Continued)																
C. L. Duncan Irrigation well	14N/3E-23M2	6-30-55	68	396				24 / 1.04					8.0 / 0.23							165		USGS
		10-4-55	63	404				25 / 1.09					7.0 / 0.20							156		USGS
L. Ott Irrigation well	14N/3E-28D1	6-29-55	64.5	851				49 / 2.13					129 / 3.64							334		USGS
		10-3-55	66	624				34 / 1.48					91 / 2.57							230		USGS
J. Serger Irrigation well	14N/3E-26R1	6-29-55	66.5	1540				76 / 3.30					330 / 9.31							606		USGS
		7-30-56	72	1316				47 / 2.03					238 / 6.72							582		DWR
G. E. Jornell Irrigation well	14N/3E-31B1	6-29-55	65	847				76 / 3.30					63 / 1.78			0.24				306		USGS
		10-3-55	65	767				67 / 2.91					55 / 1.55							272		USGS
E. L. Carruthers Domestic well	15N/2E-26D2	6-28-55	71	594	8.2	45 / 2.25	36 / 2.99	28 / 1.22	0.9 / 0.02	0 / 0.00	277 / 4.54	15 / 0.31	42 / 1.18	26 / 0.42	0.0	0.08	50	379	19	262	35	USGS
		10-3-55	74	884				39 / 1.70					68 / 1.92							381		USGS
A. Eager Irrigation well	15N/3E-4C2	6-28-55	66	730				25 / 1.09					16 / 0.45							378		USGS
		10-3-55	66	669				26 / 1.13					12 / 0.34							311		USGS
Hamilton & Broberg Irrigation well	15N/3E-26M1	6-30-55	63	357				34 / 1.48					13 / 0.37							121		USGS
T. S. Madden Irrigation well	15N/3E-28A2	6-28-55	69	1070				50 / 2.17					65 / 1.83							502		USGS
		10-3-55	66	1180				51 / 2.22					67 / 1.89							551		USGS

a Determined by addition of constituents

b Gravimetric determination.

Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million						Mineral constituents in equivalents per million						Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	NC ppm	
	MDB&M				SUTTER-YUBA AREA-SACRAMENTO VALLEY (Continued)																	
W. A. Glentzer Irrigation well	15N/3E-29Q1	6-29-55	64	673				31 / 1.35					6.0 / 0.17							328		USGS
		10-3-55	64	682				28 / 1.22					14 / 0.39							317		USGS

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	MDE&M					SACRAMENTO COUNTY-SACRAMENTO VALLEY																
H. Alberg Irrigation well	5N/5E-3F1	8-9-55	66	293	7.8	26 / 1.30	10 / 0.86	22 / 0.96	1.4 / 0.04	0 / 0.00	177 / 2.90	4.8 / 0.10	7.7 / 0.22	0.4 / 0.01	0.0	0.00	49	208	30	108	0	USGS
		11-7-55	64	281				23 / 1.00					7.0 / 0.20							103		DWR
		8-29-56	68	293				23 / 1.00					7.0 / 0.20		0.00					116		USGS
Fred Frey Irrigation well	6N/5E-17E1	11-7-55	63	323	8.5	23 / 1.15	15 / 1.23	19 / 0.83	1.8 / 0.05	6 / 0.20	160 / 2.62	4.0 / 0.08	10 / 0.28	2.0 / 0.03	0.1 / 0.01	0.00	56	216	25	119	0	USGS
Hart Ranch Irrigation well	6N/6E-20F1	8-12-55	65	222	7.4	14 / 0.70	10 / 0.86	17 / 0.74	1.8 / 0.05	0 / 0.00	118 / 1.93	5.4 / 0.11	8.0 / 0.23	2.4 / 0.04	0.2 / 0.01	0.05	78	195	32	78	0	USGS
M. Perry Irrigation well	7N/4E-4R1	8-10-55	59	187	7.5	15 / 0.75	9.9 / 0.81	8.2 / 0.36	2.2 / 0.06	0 / 0.00	108 / 1.77	2.6 / 0.05	6.8 / 0.19	0.0	0.1 / 0.01	0.07	35	133	18	78	0	USGS
		11-7-55	57	189				9 / 0.38					6 / 0.17							79		DWR
State of California Domestic and Irrigation well	7N/5E-7C1	8-12-55	66	214	7.5	17 / 0.85	7.9 / 0.65	16 / 0.70	2.0 / 0.05	0 / 0.00	121 / 1.98	1.4 / 0.03	10 / 0.28	0.1 / 0.00	0.1 / 0.01	0.04	41	156	31	75	0	USGS
		11-4-55	63	215				16 / 0.68					8.9 / 0.25							78		DWR
		5-2-56		218				14 / 0.63					10 / 0.28							78		DWR
		8-29-56	67	212				16 / 0.70					10 / 0.28			0.03				78		USGS
H. Sutter Irrigation well	7N/5E-32J2	8-12-55	66	308	7.8	23 / 1.15	15 / 1.21	21 / 0.91	1.9 / 0.05	0 / 0.00	173 / 2.84	3.6 / 0.07	10 / 0.28	5.5 / 0.09	0.1 / 0.01	0.02	61	226	27	118	0	USGS
		11-7-55	64	312				21 / 0.93					9.0 / 0.25							119		DWR
		8-29-56	70	306				21 / 0.91					9.0 / 0.25							122		USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analyses by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																
E. C. Hummel Domestic and irrigation well	7N/6E-22R1	8-10-55	67	229	7.5	17 0.85	10 0.85	15 0.65	0.9 0.02	0 0.00	116 1.90	3.7 0.08	9.1 0.26	5.7 0.09	0.2 0.01	0.00	71	190	27	85	0	USGS
		11-7-55	65	231				15 0.65					9.0 0.25							88		DWR
		5-7-56		229				16 0.71					9.1 0.26							86		DWR
		8-29-56	72	311				14 0.61					17 0.48			0.00				134		USGS
Lee School District 4 Domestic well	7N/7E-27P1	8-10-55	70	268	7.2	19 0.95	10 0.84	20 0.87	1.2 0.03	0 0.00	130 2.13	1.2 0.02	18 0.51	5.6 0.09	0.1 0.01	0.01	64	203	32	89	0	USGS
		11-7-55	65	306				23 1.00					21 0.59					106				DWR
		8-29-56	70	263				21 0.91					16 0.45			0.00				92		USGS
Land Park Water Maintenance Dist.	8N/4E-26D1	2-7-56		193	8.2	16 0.80	11 0.88	8.0 0.35	1.4 0.04	0 0.00	110 1.80	1.0 0.02	8.5 0.24	0.00	0.1 0.01	0.00	45	145	17	84	0	USGS
Dept. of Public Works Domestic well	8N/5E-15H1	8-9-55	74	343	8.1	41 2.05	9.2 0.76	14 0.61	1.0 0.03	0 0.00	172 2.82	1.6 0.03	19 0.54	0.5 0.01	0.1 0.01	0.00	54	225	18	140	0	USGS
		11-3-55	66	371				16 0.70					30 0.85							155		DWR
		8-29-56	71	338				15 0.65					26 0.73			0.04				143		USGS
Edward A. Morris Domestic well	8N/5E-21H2	8-9-55	71	284	7.3	27 1.35	13 1.05	11 0.48	2.2 0.06	0 0.00	132 2.16	9.0 0.19	12 0.34	16 0.26	0.1 0.01	0.02	62	217	16	120	12	USGS
		11-4-55	63	289				11 0.48					11 0.31									DWR
		5-3-56		306				10 0.45					12 0.34							132		DWR
		8-29-56	69	343				12 0.52					14 0.40			0.00				153		USGS

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC. ppm	Analyzed by[c]
	MDB&M					SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																
Haight Irrigation well	8N/5E-24M1	8-9-55	66	171	7.5	16 / 0.80	5.5 / 0.45	9.8 / 0.43	1.4 / 0.04	0 / 0.00	87 / 1.43	3.2 / 0.07	6.2 / 0.18	4.0 / 0.07	0.1 / 0.01	0.00	60	149	25	62	0	USGS
		11-4-55	64	168				10 / 0.43					6 / 0.17							66		DWR
		5-3-56		170				9 / 0.40					6 / 0.17							62		DWR
Antone Amarel Domestic well	8N/5E-30N1	8-9-55	74	247	7.5	21 / 1.05	11 / 0.89	13 / 0.57	2.0 / 0.05	0 / 0.00	121 / 1.98	4.4 / 0.09	10 / 0.28	10 / 0.16	0.1 / 0.01	0.03	66	198	22	97	0	USGS
		11-4-55	63	250				13 / 0.58					9 / 0.25							98		DWR
		5-3-56		243				12 / 0.51					10 / 0.28							94		DWR
		8-29-56	68	243				13 / 0.57					9.0 / 0.25			0.00				98		USGS
T. Saiki Irrigation Well	8N6E-5K1	8-12-55	64	336	8.2	33 / 1.65	15 / 1.27	14 / 0.61	1.7 / 0.04	0 / 0.00	174 / 2.85	15 / 0.31	7.8 / 0.22	16 / 0.26	0.1 / 0.01	0.00	54	243	17	146	3	USGS
		8-30-56	64	498				18 / 0.78					11 / 0.31			0.00				235		USGS
F. Umeda Domestic well	8N/6E-20J1	8-12-55	66	161	7.5	14 / 0.70	5.8 / 0.48	9.5 / 0.41	1.5 / 0.04	0 / 0.00	82 / 1.34	2.4 / 0.05	5.8 / 0.16	4.7 / 0.08	0.1 / 0.01	0.00	61	145	25	59	0	USGS
		11-3-55	63	159				10 / 0.44					5 / 0.14							56		DWR
		8-29-56	70	189				11 / 0.48					6.8 / 0.19			0.00				76		USGS
Hoffart Irrigation well	9N/4E-1R1	8-11-55	67	250	7.7	18 / 0.90	8.4 / 0.69	21 / 0.91	1.7 / 0.04	0 / 0.00	126 / 2.06	4.0 / 0.08	15 / 0.42	1.5 / 0.02	0.2 / 0.01	0.10	71	203	36	79	0	USGS
K. Kimura Irrigation well	9N/4E-8L1	11-2-55	60	908	8.4	49 / 2.45	38 / 3.11	98 / 4.26	3.0 / 0.08	9 / 0.30	366 / 6.00	77 / 1.60	72 / 2.03	5.4 / 0.09	0.0	0.30	45	577	43	278	0	USGS
		5-4-56		589				14 / 0.61					10 / 0.28							308		DWR
		8-31-56	62	853				92 / 4.00					62 / 1.75			0.29				285		USGS

o Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or [illegible]

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M			SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																		
L. M. Swalley Irrigation well	9N/4E-27F1	8-11-55	60	720	7.8	45 / 2.25	15 / 1.24	76 / 3.30	4.5 / 0.12	0 / 0.00	227 / 3.72	4.3 / 0.09	118 / 3.33	0.1 / 0.00	0.1 / 0.01	0.41	46	421	39	175	0	USGS
		8-31-56	64	781				84 / 3.65					145 / 4.09			0.45				205		USGS
Citizens Utilities Company of California Domestic Well	9N/5E-15N1	11-3-55	52	323				24 / 1.06					34 / 0.96							110		DWR
		8-30-56	72	373				26 / 1.13					39 / 1.10			0.07				135		USGS
Citizens Utilities Company of California Domestic well	9N/5E-20I1	11-3-55	68	376				34 / 1.47					47 / 1.33							115		DWR
		5-8-56		368				29 / 1.28					45 / 1.28							112		DWR
Citizens Utilities Company of California Domestic well	9N/5E-21C1	11-3-55	68	391				35 / 1.52					50 / 1.41							113		DWR
		5-8-56		320				18 / 0.79					32 / 0.91							114		DWR
Citizens Utilities Company of California Domestic well	9N/5E-21E1	11-3-55	69	394				37 / 1.59					50 / 1.41							113		DWR
		5-8-56		386				32 / 1.38					50 / 1.41							112		DWR
		8-30-56	73	376				34 / 1.48					49 / 1.38			0.10				113		USGS
Citizens Utilities Company of California Domestic well	9N/5E-29D1	11-3-55	68	442				41 / 1.78					66 / 1.86							123		DWR

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M			SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																		
Citizens Utilities Company of California Domestic well	9N/5E-29D1	5-8-56		425				35 / 1.54					65 / 1.82							119		DWR
		8-30-56	77	431				40 / 1.74					65 / 1.83			0.38				124		USGS
Citizens Utilities Company of California Domestic well	9N/5E-29L1	11-3-55	62	364				20 / 1.32					44 / 1.24							113		DWR
		5-8-56		409				25 / 1.08					39 / 1.11							155		DWR
		8-30-56	70	398				28 / 1.22					41 / 1.16			0.13				149		USGS
Floyd J. Burge Domestic well	9N/5E-32Q1	8-11-55	66	413	7.2	30 / 1.50	19 / 1.54	20 / 0.87	5.0 / 0.13	0 / 0.00	139 / 2.28	16 / 0.33	55 / 1.55	0.2 / 0.00	0.1 / 0.01	0.03	67	280	22	152	38	USGS
		11-3-55	52	479				21 / 0.92					34 / 0.96							200		DWR
		5-3-56		480				19 / 0.81					38 / 1.06							195		DWR
		8-30-56	72	428				20 / 0.87					55 / 1.55			0.02				168		USGS
J. Malloy Domestic well (N. Koshell, Owner as of 8-30-56)	9N/6E-6E1	11-2-55	56	234	8.2	16 / 0.80	11 / 0.88	15 / 0.65	0.8 / 0.02	0 / 0.00	98 / 1.61	1.6 / 0.03	21 / 0.59	3.7 / 0.06	0.2 / 0.01	0.00	81	198	28	84	4	USGS
		8-30-56	69	242				15 / 0.65					22 / 0.62							92		USGS

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M					SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																
O. A. Melby Domestic well	9N/6E-18K1	8-11-55	68	213	7.3	18 / 0.90	7.5 / 0.61	14 / 0.61	1.0 / 0.03	0 / 0.00	1.07 / 1.75	2.5 / 0.05	11 / 0.31	3.9 / 0.06	0.2 / 0.01	0.00	78	189	28	76	0	USGS
		11-2-55	58	217				15 / 0.66					10 / 0.28							98		DWR
		8-30-56	70	215				15 / 0.65					10 / 0.28			0.00				80		USGS
J. W. Edwards Domestic well	9N/6E-25H1	3-23-55		181	7.5	15 / 0.75	7.3 / 0.60	9.8 / 0.43	1.3 / 0.03	0 / 0.00	94 / 1.54	4.3 / 0.09	4.0 / 0.11	2.1 / 0.03		0.16			23	68	0	USGS
		7-26-55	70	182									3.3 / 0.09	1.8 / 0.03								USGS
		5-21-56	69	186	7.8	17 / 0.85	11 / 0.87	11 / 0.48	1.3 / 0.03	0 / 0.00	105 / 1.72	18 / 0.37	4.0 / 0.11	1.7 / 0.03	0.8 / 0.04	0.16	59	176	21	86	0	USGS
C. C. Kemper Domestic well	9N/7E-15F1	11-4-55	67	360	8.4	30 / 1.50	21 / 1.71	14 / 0.61	1.5 / 0.04	3 / 0.10	172 / 2.82	8.4 / 0.18	18 / 0.51	12 / 0.19	0.0	0.0	53	246	16	161	15	USGS
Libby-McNeil & Libby Industrial well	9N/7E-16P1	3-23-55		646	7.8	59 / 2.94	34 / 2.76	18 / 0.78	2.5 / 0.06	0 / 0.00	232 / 3.80	3.3 / 0.07	82 / 2.31	4.8 / 0.08		0.05			12	285	95	USGS
		7-26-55	64	466									32 / 0.90	6.0 / 0.10								USGS
		11-4-55	62	523	8.5	53 / 2.64	26 / 2.12	18 / 0.78	2.3 / 0.06	8 / 0.27	210 / 3.44	14 / 0.29	52 / 1.47	5.2 / 0.08	0.0	0.06	56	338	14	238	53	USGS
		8-30-56	66	403				14 / 0.61					19 / 0.54			0.00				189		USGS
Capital Dredging Co Domestic well	9N/7E-26H1	3-23-55		115	7.5	8.9 / 0.44	3.8 / 0.32	6.5 / 0.28	0.7 / 0.02	0 / 0.00	39 / 0.64	7.2 / 0.15	5.0 / 0.14	8.6 / 0.14		0.22			26	38	6	USGS
		7-26-55	69	121									4.6 / 0.13	8.9 / 0.14								USGS
		11-4-55	62	123			6 / 0.26						4 / 0.11							43		DWR
		5-21-56	63	112	7.2	9.6 / 0.48	3.7 / 0.30	7.5 / 0.33	0.8 / 0.02	0 / 0.00	46 / 0.75	1.0 / 0.02	5.0 / 0.14	8.9 / 0.14	1.0 / 0.05	0.16	66	126	29	39	1	USGS

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																
Brighton Sand and Gravel Co Domestic and Irrigation well	9N/7E-26J1	3-23-55		237	7.8	13 / 0.65	7.9 / 0.65	27 / 1.17	1.3 / 0.03	0 / 0.00	128 / 2.10	6.4 / 0.13	6.0 / 0.17	3.2 / 0.05		0.20			46	65	0	USGS
		7-26-55	72	238									6.9 / 0.20	2.3 / 0.04								USGS
J. Collier Domestic well	9N/7E-27Q1	3-23-55		191	7.8	11 / 0.55	8.2 / 0.67	16 / 0.70	0.6 / 0.01	0 / 0.00	88 / 1.44	6.4 / 0.13	6.5 / 0.18	1.6 / 0.03		0.05			35	61	0	USGS
		7-26-55	67	217									9 / 0.25	3.9 / 0.06								USGS
		5-21-56	69	214	7.9	13 / 0.65	11 / 0.93	17 / 0.74	0.7 / 0.02	0 / 0.00	106 / 1.74	16 / 0.33	8.5 / 0.24	3.3 / 0.06	1.0 / 0.05	0.05	60	183	32	79	0	USGS
Aerojet Corp. Industrial well	9N/7E-28B1	3-23-55		250	7.8	17 / 0.85	14 / 1.11	14 / 0.61	2.3 / 0.06	0 / 0.00	141 / 2.31	12 / 0.25	7.5 / 0.21	0.4 / 0.01		0.19			23	98	0	USGS
		7-26-55		247									7.1 / 0.20	0.2 / 0.00								USGS
		11-4-55	65	245	8.4	24 / 1.20	8.8 / 0.73	15 / 0.65	2.7 / 0.07	4 / 0.13	136 / 2.23	3.0 / 0.06	7.0 / 0.20	0.2 / 0.00	0.1 / 0.01	0.03	73	205	25	96	0	USGS
		5-21-56		247	8.0	23 / 1.15	5.5 / 0.45	14 / 0.61	2.6 / 0.07	0 / 0.00	151 / 2.48	1.0 / 0.02	8.0 / 0.23	0.2 / 0.00	1.0 / 0.05	0.08	74	228	23	80	0	USGS
Aerojet Corp. Industrial and Domestic well	9N/7E-28K1	4-3-56		266	8.0	23 / 1.15	14 / 1.17	12 / 0.52	1.4 / 0.04	0 / 0.00	153 / 2.51	4.0 / 0.08	7.0 / 0.20	4.2 / 0.07	1.0 / 0.05	0.03		199	18	116	0	USGS
		4-23-56		219	7.3	17 / 0.85	12 / 0.99	16 / 0.70	2.1 / 0.05	0 / 0.00	133 / 2.18	6.0 / 0.13	10 / 0.28	0.5 / 0.01	0.7 / 0.04	0.13	67	198	27	92	0	USGS
J. A. Rodgers Domestic well	9N/7E-32B1	3-23-55		102	7.3	7.6 / 0.38	5.1 / 0.42	4.8 / 0.21	0.3 / 0.01	0 / 0.00	47 / 0.77	3.1 / 0.06	3.0 / 0.08	4.0 / 0.06		0.15			20	40	1	USGS
		7-26-55	69	102									3.2 / 0.09	2.9 / 0.05								USGS
		11-4-55	57	105				8 / 0.35					2 / 0.06							41		USGS
		5-21-56	69	105		7.6 / 0.38	7.6 / 0.62	5.5 / 0.24	0.5 / 0.01	0 / 0.00	61 / 1.00	5.0 / 0.10	4.0 / 0.11	3.5 / 0.06	1.0 / 0.05	0.14	59	125	18	50	0	USGS

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					SACRAMENTO COUNTY-SACRAMENTO VALLEY (Continued)																
Ben Petruci Industrial and Domestic well	9N/7E-33E1	3-23-55		192	7.8	12 / 0.60	13 / 1.08	7.9 / 0.34	0.9 / 0.02	0 / 0.00	105 / 1.72	17 / 0.35	1.0 / 0.03	0.2 / 0.00		0.04			17	84	0	USGS
		7-26-55	69	205									4.1 / 0.12	0.1 / 0.00								USGS
		5-21-56	69	351	8.2	33 / 1.65	23 / 1.85	11 / 0.48	1.0 / 0.03	0 / 0.00	218 / 3.57	9.0 / 0.19	10 / 0.28	0.0	1.0 / 0.05	0.06	46	241	12	175	0	USGS
Westby Domestic well	10N/4E-23A1	11-2-55	56	581	8.3	45 / 2.25	24 / 1.95	40 / 1.74	1.8 / 0.05	2 / 0.07	235 / 3.85	16 / 0.33	63 / 1.78	0.4 / 0.01	0.0	0.17	57	365	29	210	14	USGS
		8-31-56	66	545				41 / 1.78					62 / 1.75			0.07				200		USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	1DB&M					SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY																
California Water Service Municipal well	1N/6E-3H3	9-13-55	66	414	8.0	4.9 / 0.25	1.3 / 0.10	90 / 3.91	0.8 / 0.02	0 / 0.00	199 / 3.26	16 / 0.33	30 / 0.85	0.1 / 0.00	0.0 / 0.00	0.76	60	302	91	17	0	USGS
		7-13-56	71	691				101 / 4.40					134 / 3.78							113		DWR
California Water Service Company Municipal well	1N/6E-4D1	9-13-55	66	502	7.8	9.5 / 0.47	3.8 / 0.31	99 / 4.30	1.4 / 0.04	0 / 0.00	217 / 3.56	0.0 / 0.00	56 / 1.58	0.3 / 0.00	0.0 / 0.00	0.66	58	336	84	39	0	USGS
		11-16-55	74	490				113 / 4.90					52 / 1.47							43		DWR
		1-17-56	65	481				95 / 4.14					53 / 1.47							36		DWR
		3-15-56	68	498	7.8	7 / 0.35	4.1 / 0.34	99 / 4.30	1.2 / 0.03	0 / 0.00	211 / 3.46	0.0 / 0.00	56 / 1.57	0.2 / 0.00	0.02 / 0.00	0.55	62	336	86	35	0	DWR
		5-14-56	72	529									50 / 1.41							44		DWR
		7-13-56	72	514				99 / 4.30					93 / 3.61							40		DWR
City of Stockton Irrigation well	1N/6E-4J1	9-13-55	66	502	7.7	13 / 0.65	5.8 / 0.48	99 / 4.30	0.9 / 0.02	0 / 0.00	185 / 3.03	23 / 0.48	69 / 1.95	0.0 / 0.00	0.0 / 0.00	0.41	42	344	79	57	0	USGS
		11-16-55	72	603				104 / 4.53					95 / 2.68							68		DWR
		3-15-56	66	537	7.9	11 / 0.57	4.5 / 0.37	99 / 4.32	0.8 / 0.02	0 / 0.00	186 / 3.05	3.7 / 0.08	75 / 2.11	0.2 / 0.00	0.0 / 0.00	0.39	44	332	82	47	0	DWR
		5-14-56	72	547									65 / 1.83							52		DWR
		7-13-56	72	545				101 / 4.40					72 / 2.02								50	DWR
Union Ice Company Refrigeration Industrial well	1N/6E-10E1	9-13-55	64	1340	7.5	56 / 2.79	20 / 1.61	196 / 8.52	2.0 / 0.05	0 / 0.00	242 / 3.97	34 / 0.71	284 / 8.01	2.1 / 0.03	0.1 / 0.01	0.61	42	756	66	220	22	USGS
Union Ice Company Refrigeration Industrial well	1N/6E-10E2	11-16-55		897				165 / 7.17					181 / 5.10							100		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

a Determined by addition of constituents
b Gravimetric determination.

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in ppm / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	[DB&M]					SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY (Continued)																
Union Ice Company Refrigeration Industrial well	1N/6E-10E2	1-17-56	64	831				137 5.96					173 4.87							94		DWR
		3-15-56	74	865	8.1	24 1.18	9.2 0.76	142 6.18	1.1 0.03	0 0.00	175 2.86	10 0.21	178 5.03	0.4 0.01	0.04 0.00	0.45	43	495	76	97	0	DWR
		5-14-56	65	918									165 4.64							94		DWR
		7-13-56	73	927				146 6.22					185 5.23							105		DWR
Fiberboard Products Inc. Industrial well	1N/6E-10P1	9-13-55	73	2650	7.4	102 5.09	51 4.19	346 15.05	4.0 0.10	0 0.00	160 2.62	3.0 0.06	765 21.58	2.1 0.03	0.3 0.02	0.90	61	1410	62	464	333	USGS
		11-16-55	79	2600				346 15.05					761 21.41							443		DWR
		1-17-56	66	2559				348 15.13					742 20.94							434		DWR
		3-15-56	74	2520	7.6	99 4.93	46 3.80	334 14.54	4.2 0.11	0 0.00	162 2.65	0.0 0.00	735 20.73	0.2 0.00	0.0 0.00	1.1	55	1355	62	437	304	DWR
		5-14-56	72	2640									743 20.96							419		DWR
		7-13-56	72	2690				354 15.38					265 7.48							453		DWR
Fiberboard Products Inc. Industrial well	1N/6E-10P2	9-13-55	73	1500	8.0	47 2.35	21 1.73	220 9.57	2.8 0.07	0 0.00	191 3.13	4.0 0.08	376 10.60	1.8 0.03	0.0 0.00	1.0	60	828	70	204	47	USGS
		11-16-55	79	1530				230 10.01					387 10.90							210		DWR
		1-17-56	66	1494									385 10.87							211		DWR
		3-15-56	72	1480	8.0	47 2.33	21 1.73	225 9.80	3.0 0.08	0 0.00	190 3.12	0.0 0.00	382 10.77	0.2 0.00	0.0 0.00	1.0	61	835	70	203	47	DWR
		5-14-56	72	1575									397 11.2							218		DWR
		7-13-56	72	1470				229 10.0					399 11.25							218		DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC. ppm	Analyzed by[c]
	MDB&M					SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY (Continued)																
California Water Service Company Domestic well	1N/6E-14C1	9-13-55	65	540	7.8	30 / 1.50	7.9 / 0.65	70 / 3.04	1.5 / 0.04	0 / 0.00	165 / 2.70	13 / 0.27	86 / 2.43	0.0 / 0.00	0.0 / 0.00	0.27	47	337	58	107	0	USGS
California Water Service Company Domestic well	1N/6E-14C2	9-13-55	65	522	7.9	18 / 0.90	7.3 / 0.60	80 / 3.48	1.3 / 0.03	0 / 0.00	167 / 2.74	6.0 / 0.12	81 / 2.28	0.0 / 0.00	0.0 / 0.00	0.41	52	328	69	75	0	USGS
California Water Service Company Domestic well	1N/6E-14H1	9-13-55	65	394	8.1	2.7 / 0.14	5.2 / 0.43	78 / 3.39	1.2 / 0.03	0 / 0.00	183 / 3.00	5.4 / 0.11	35 / 0.99	0.0 / 0.00	0.0 / 0.00	0.76	60	278	85	28	0	USGS
		11-16-55	74	395				77 / 3.35					38 / 1.07							31		DWR
		1-17-56	63	808				137 / 5.98					173 / 4.87							126		DWR
		3-15-56	72	405	8.0	7 / 0.35	3.5 / 0.29	79 / 3.44	1.1 / 0.03	0 / 0.00	185 / 3.03	0.0 / 0.00	40 / 1.14	0.1 / 0.00	0.08 / 0.00	0.57	63	288	84	32	0	DWR
		5-14-56	68	420									82 / 2.3							37		DWR
		7-13-56	72	437				84 / 3.67					42 / 1.19							38		DWR
Irrigation well	2N/6E-29M1	8-24-56	60	641				76 / 3.30					61 / 1.73							165		DWR
G. Barbero Domestic and Irrigation well	3N/6E-27B1	7-29-55	79	456				56 / 2.44					5.0 / 0.14							125		USGS
		11-10-55	61	530				64 / 2.78					7 / 0.20							151		DWR
		8-24-56	68	558				62 / 2.91					7.8 / 0.22							167		DWR
S. Gaberoglia Domestic & Irrigation well	4N/7E-23B2	8-1-55	79	659				42 / 1.83					88 / 2.48							235		USGS
		11-10-55	60	672				43 / 1.86					79 / 2.23							245		DWR
		8-24-56	70	629				40 / 1.74					77 / 2.18							229		DWR
Robert Nichols Irrigation well	5N/5E-33J1	8-21-56	60	323	7.1	7.4 / 0.37	4.0 / 0.33	60 / 2.63	0.55 / 0.01	0 / 0.00	193 / 3.17	0.0 / 0.00	9.9 / 0.28	0.0 / 0.00	0.0 / 0.00	0.67	29	207	79	35		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silico (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	NDBA:				SAN JOAQUIN COUNTY-SAN JOAQUIN VALLEY (Continued)																	
R. L. Barber Irrigation well	5N/5E-33K1	7-29-55	65	466				88 / 3.83					22 / 0.62							62		USGS
A. T. Sims Irrigation well	5N/8E-31J1	3-1-55	73	177				14 / 0.61					7.0 / 0.20							57		USGS
Irrigation well	1S/7E-10A1	11-10-55	62	554				37 / 1.59					21 / 0.59									DWR
		8-24-56	63	346				24 / 1.05					18 / 0.49							128		DWR
Irrigation well	1S/9E-8P1	7-29-55	70	220				17 / 0.74					12 / 0.34							69		USGS
		11-10-55	68	213				16 / 0.69					11 / 0.31							69		DWR
		8-24-56	69	226				17 / 0.76					11 / 0.31							76		DWR
C. B. Dusing Domestic well	2S/4E-1P1	7-29-55	73	763				133 / 5.78					68 / 1.92							89		USGS
		11-10-55	60	765				163 / 7.08					70 / 1.97							86		DWR
		8-24-56	72	760				136 / 5.91					68 / 1.93							88		DWR
L. Huck Domestic well	3S/5E-8L1	7-29-55	79	845				78 / 3.39					97 / 2.74							248		USGS
		11-10-55	63	883				81 / 3.53					99 / 2.8							259		DWR
		8-24-56	72	857				78 / 3.40					96 / 2.70							256		DWR
W. Moler Irrigation well	3S/5E-35D1	7-29-55	74	1200				130 / 5.65					69 / 1.95							356		USGS
		8-24-56	75	1240				111 / 4.81					72 / 2.02							405		DWR

a Determined by addition of constituents.

b Gravimetric determination

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M.					WEST SIDE AREA, SAN JOAQUIN VALLEY																
Hotchkiss Estate Irrigation well	13S/13E-14N1	7-28-55	88	5590				1140 / 49.57					742 / 20.93			1.9			86			USGS
		10-11-55	87	5660				1070 / 46.54					718 / 20.25							412		USGS
Irrigation well	13S/14E-34N1	7-28-55	73	4740				760 / 33.05					690 / 19.46			1.9			58			USGS
		11-18-55	73	4900				720 / 31.32					366 / 10.32							1210		USGS
		6-26-56	71	2490				190 / 8.25					138 / 3.88			1.6				1143		DWR
Pappas & Company Irrigation well	14S/13E-12N1	7-28-55	84	1330				259 / 11.26					88 / 2.48			1.2			89			USGS
		6-26-56	82	1190				228 / 9.90					61 / 1.71			0.90			78	78		DWR
Employees Enterprises Irrigation well	14S/13E-21N1	7-28-55	88	2100				340 / 14.78					110 / 3.10			2.6			64			USGS
		10-11-55	88	2090				336 / 14.62					110 / 3.10							401		USGS
		6-26-56	88	2110				342 / 14.9					121 / 3.41			3.2				390		DWR
Employees Enterprises Irrigation well	14S/13E-22N1	7-28-55	90	1920				368 / 16.00					114 / 3.22			2.2			82			USGS
		10-11-55	90	1840				360 / 15.66					108 / 3.05							152		USGS
Pilibos Brothers Irrigation well	14S/13E-25N1	7-28-55	90	1940				387 / 16.83					139 / 3.92			1.9			85			USGS
		10-11-55	89	1860				365 / 15.88					130 / 3.67							149		USGS
		6-29-56	88	2010				377 / 16.4					156 / 4.40			1.4				192		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

a Determined by addition of constituents

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M				WEST SIDE AREA, SAN JOAQUIN VALLEY (Continued)																	
Pappas & Company Irrigation well	14S/14E-9Q1	7-28-55	82	1860				361 / 15.70					159 / 4.48			1.5			83			USGS
		10-11-55	82	1840				346 / 15.05					152 / 4.29							175		USGS
		6-20-56	80	1760				321 / 13.9					120 / 3.39			1.2				181		DWR
Vista del Llano Irrigation well	14S/14E-11N1	7-28-55	73	6290				957 / 41.61					1010 / 28.49			2.2			56			USGS
		10-11-55	75	6420				963 / 41.89					1040 / 29.33							820		USGS
		6-26-56	73	6100				1020 / 44.2					1070 / 30.2			1.7				1520		DWR
Jack Soanes Irrigation well	14S/14E-12N1	7-28-55	80	2050				420 / 18.26					200 / 5.64			1.6			91			USGS
		10-11-55	80	2040				414 / 18.01					211 / 5.95							92		USGS
William Giacone Irrigation well	14S/14E-17Q1	7-28-55	80	1660				235 / 10.22					72 / 2.03			1.7			57			USGS
		10-12-55	78	1930				231 / 10.05					90 / 2.54							564		USGS
		6-26-56	78	2170				286 / 12.4					186 / 5.23			1.4				544		DWR
Murietta Farms Irrigation well	14S/14E-28E1	7-28-55	76	2400				235 / 10.22					118 / 3.33			2.2			35			USGS
		10-12-55	76	2360				224 / 18.48					118 / .33							924		USGS
		6-26-56	76	2150				215 / 9.35					116 / 3.26			1.5				767		DWR
L. A. & J. K. Jones Irrigation well	14S/15E-31N1	7-28-55	74	6590				968 / 42.09					882 / 24.88			1.9			52			USGS
		6-26-56	73	7210				1110 / 48.40					1000 / 28.2			0.98				1950		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDD&M				WEST SIDE AREA, SAN JOAQUIN VALLEY (Continued)																	
Employees Enterprises Irrigation well	15S/12E-1N1	7-28-55	82	3080				584 / 25.39					185 / 5.22			3.5			75			USGS
		10-12-55	82	3080				578 / 25.14					187 / 5.27							411		USGS
		6-29-56	81	3540				614 / 26.8					236 / 6.65			3.5				505		DWR
Employees Enterprises Irrigation well	15S/13E-5N1	6-28-56	85	2770				334 / 14.10					149 / 4.20			3.1				890		DWR
Murietta Farms Irrigation well	15S/14E-4D1	7-28-55	82	1430				238 / 10.35					56 / 1.58			1.7			68			USGS
		10-12-55	79	1750				214 / 9.31					68 / 1.92							478		USGS
		6-26-56	80	1510				242 / 10.5					61 / 1.71			1.3				297		DWR
F. A. Yearout Irrigation well	15S/14E-36Q2	7-28-55	88	1580				306 / 13.31					77 / 2.17			2.2			85			USGS
		10-12-55	88	1550				288 / 12.53					74 / 2.09							127		USGS
		6-26-56	88	1640				325 / 14.1					85 / 2.40			2.3				112		DWR
Pucheu Irrigation well	15S/15E-20N2	10-12-55	81	1340				241 / 10.48					56 / 1.58							143		USGS
Reece Brothers Irrigation well	15S/15E-25N1	7-26-55	72	1890				200 / 8.70					78 / 2.20			1.3			39			USGS
		6-27-56	72	2250				228 / 9.93					107 / 3.01			1.4				858		DWR
Reece Brothers Irrigation well	15S/15E-27N1	7-26-55	73	1650				131 / 5.70					61 / 1.72			0.81			28			USGS
Irrigation well	15S/15E-35N1	6-27-56	74	1800	8.0	127 / 6.32	112 / 9.20	123 / 5.35	3.7 / 0.09	0 / 0.00	136 / 2.23	800 / 16.66	60 / 1.71	2 / 0.03	0.4 / 0.02	0.77	36	1332	24	778		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M				WEST SIDE AREA, SAN JOAQUIN VALLEY(Continued)																	
Irrigation well	15S/16E-7Q1	7-26-55	70	2060				373 / 16.44					132 / 3.72			0.82			73			USGS
		10-12-55	70	2140				370 / 16.10					138 / 3.89							302		USGS
William Deal Irrigation well	16S/14E-10Q1	7-28-55	90	1600				235 / 10.22					43 / 1.21			2.0			61			USGS
		10-12-55	89	1600				235 / 10.22					44 / 1.24							336		USGS
		6-26-56	82	2430				227 / 9.88					26 / 0.73			1.5				980		DWR
F. A. Yearout Irrigation well	16S/15E-8N1	7-28-55	81	1480				185 / 8.04					58 / 1.64			1.3			49			USGS
		10-12-55	80	1470				172 / 7.48					58 / 1.64							421		USGS
		6-26-56	79	1490				194 / 8.44					62 / 1.74			1.2				414		DWR
Irrigation well	16S/15E-24N2	10-12-55	63	1120				176 / 7.66					30 / 0.85							171		USGS
		6-27-56	82	1130				224 / 9.75					32 / 0.91			1.7				169		DWR
Vista Del Llano Irrigation well	16S/15E-25Q1	7-27-55	78	1780				193 / 8.61					78 / 2.20			1.2			41			USGS
		10-12-55	79	1780				189 / 8.22					74 / 2.09							572		USGS
		6-27-56	79	1840				217 / 9.46					82 / 2.30			1.3				655		DWR
Grognani Brothers Irrigation well	16S/16E-6N1	7-26-55	74	1710				198 / 8.61					55 / 1.55			1.2			43			USGS
		6-27-56	74	1750				192 / 8.33					58 / 1.63			1.3				582		DWR

b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC. ppm	Analyzed by c
	MDB&M				WEST SIDE AREA, SAN JOAQUIN VALLEY(Continued)																	
Rabb Brothers Irrigation well	16S/16E-9N1	7-26-55	74	1500				205 / 8.91					61 / 1.72			1.4			56			USGS
		10-12-55	75	1480				196 / 8.53					61 / 1.72							340		USGS
		6-27-56	74	1520				194 / 8.43					66 / 1.86			1.3				356		DWR
Vista Del Llano Irrigation well	16S/16E-20N1	7-27-55	74	1890				144 / 6.26					52 / 1.47			0.55			27			USGS
		10-17-55	75	1880				152 / 6.61					46 / 1.30							808		USGS
Vista Del Llano Irrigation well	17S/16E-18E1	7-27-55	88	1410				273 / 11.87					84 / 2.37			1.8			82			USGS
		10-13-55	88	1410				255 / 11.09					87 / 2.45							123		USGS
		6-27-56	88	1440				247 / 10.8					87 / 2.44			1.6				119		DWR
Vista Del Llano Irrigation well	17S/16E-18Q1	10-13-55	87	1400				235 / 10.22					96 / 2.71							160		USGS
Harnish Brotners Irrigation well	17S/16E-24N1	7-27-55	78	1440				200 / 8.70					50 / 1.41			1.0			56			USGS
		10-13-55	79	1410				185 / 8.05					48 / 1.35							318		USGS
W. C. Farrell Irrigation well	17S/16E-28N2	7-27-55	87	1370				221 / 10.04					38 / 1.07			2.0			71			USGS
		6-27-56	86	1385				223 / 9.71					40 / 1.14			1.9				204		DWR
H. W. Deavenport Irrigation well	17S/17E-23Q1	7-27-55	76	1190				180 / 7.83					40 / 1.13			0.71			63			USGS
		6-27-56	76	1210				178 / 7.75					42 / 1.19			0.78				232		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	MDB&M					WEST SIDE AREA, SAN JOAQUIN VALLEY (Continued)																
H. W. Deavenport Irrigation well	17S/17E-27R1	7-27-55	75	1310				176 / 7.65					58 / 1.64			0.80			57			USGS
		6-27-56	77	1330				174 / 7.55					53 / 1.48			0.75				301		DWR
M. L. Willson Irrigation well	18S/16E-1N1	7-27-55	82	1260				198 / 8.61					45 / 1.27			1.2			66			USGS
		10-13-55	82	1280				185 / 8.05					44 / 1.24							218		USGS
Harris Farms Irrigation well	18S/16E-24N1	10-13-55	90	3190				474 / 20.62					750 / 21.15							504		USGS
F. C. Diener Irrigation well	18S/17E-13N1	7-27-55	78	1290				185 / 8.04					57 / 1.61			0.59			60			USGS
		6-27-56	78	1332				174 / 7.56					61 / 1.71			0.67				291		DWR
F. C. Diener Irrigation well	18S/17E-13Q1	7-27-55	83	1010				185 / 8.04					33 / 0.93			0.97			81			USGS
		6-27-56	84	1042				178 / 7.75					42 / 1.19			1.1				94		DWR
Benson Irrigation well	18S/17E-30P1	7-27-55	81	2340				284 / 12.35					230 / 6.49			0.86			47			USGS
		10-13-55	87	2500				311 / 13.53					314 / 8.85							686		USGS
		6-26-56	79	2280				229 / 9.95					173 / 4.88			0.79				766		DWR
Cal[illegible] Irrigation well	18S/17E-33N1	7-27-55	84	2610				400 / 17.39					492 / 13.88			1.2			68			USGS
		10-13-55	85	2720				439 / 19.10					522 / 15.00							404		USGS
		6-27-56	84	2680				411 / 17.9					514 / 14.5			1.5				431		DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					WEST SIDE AREA, SAN JOAQUIN VALLEY (Continued)																
O'Neil Farms Irrigation well	19S/17E-9N1	7-27-55	80	1610				182 7.91					75 2.12			0.90			43			USGS
		10-13-55	80	1620				178 7.74					74 2.09							719		USGS
		6-27-56	80	1629				165 7.16					78 2.21			0.87				508		DWR
Giffin Inc. Irrigation well	19S/17E-13N1	7-27-55	81	1350				158 6.87					53 1.49			0.82			46			USGS
		6-27-56	80	1376				143 6.28					56 1.58			0.75				410		DWR
Giffen Inc. Irrigation well	19S/17E-34N1	7-27-55	78	1580				168 7.31					61 1.72			0.88			40			USGS
		10-13-55	79	1610				166 7.22					52 1.66							557		USGS
		6-28-56	78	1600				151 6.55					62 1.75			0.90				550		DWR
Boston Land Company Irrigation well	19S/18E-23D2	7-27-55	88	1600				315 13.70					282 7.95			1.7			88			USGS
		10-13-55	89	1550				308 13.40					265 7.47							101		USGS
Boston Land Company Irrigation well	19S/18E-28E1	7-27-55	90	2010				356 15.48					356 10.04			1.7			78			USGS
		10-13-55	89	1930				332 14.44					340 9.59							178		USGS
		6-27-56	88	1890				339 14.7					318 8.97			1.2				190		DWR
L. A. Black Irrigation well	19S/19E-30B2	6-27-56	86	1190				230 10.0					118 3.32			3.4				71		DWR
Allen Irrigation well	20S/15E-25D2	7-27-55		2070	7.7	79 3.94	111 9.16	241 10.48	44 0.11	0 0.00	215 3.52	765 15.93	134 3.78	11 0.18	0 0.00	1.5	34	1490	44	655	479	USGS
		10-14-55	73	2110				248 10.79					144 4.06							681		USGS
		6-28-56	72	2145				234 10.2					155 4.38			1.5				677		DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivolents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by[c]
	MDB&M					WEST SIDE AREA, SAN JOAQUIN VALLEY(Continued)																
Irrigation well	20S/15E-26M1	10-14-55	71	2420				263 11.44					167 4.71							840		USGS
		6-28-56	70	2330				239 10.4					157 4.43			0.90				758		DWR
Shell Oil Company Industrial Well	20S/16E-4P2	7-27-55		1860				319 13.87					112 3.16			1.5			72			USGS
		10-14-55	84	1860				308 13.40					113 3.19							280		USGS
		6-28-56	86	1890				317 13.8					119 3.35			1.2				293		DWR
Giffen Inc. Irrigation well	20S/17E-9R1	7-27-55		2340				241 10.48					108 3.05			0.98			37			USGS
Irrigation well	20S/17E-11N1	6-28-56	79	1380	8.0	66 3.28	58 4.75	155 6.74	2.9 0.07	0 0.00	141 2.31	523 10.90	46 1.31	2.2 0.04	0.3 0.02	0.95	25	948	45	400	286	DWR
S. and V. Thomas Irrigation well	20S/17E-36D1	7-27-55	77	1250				144 6.26					32 0.90			0.51			46			USGS
		10-13-55	77	1280				142 6.18					34 0.96							379		USGS
Boston Land Co. Irrigation well	20S/18E-24D1	7-27-55	91	1890				378 16.44					389 10.97			1.1			91			USGS
		10-13-55	90	1760				327 14.22					326 9.19							127		USGS
		6-27-56	94	2070				402 17.5					472 13.3			1.3				82		DWR

o Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million												Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$		Analyzed by [c]
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	N.C. ppm	
	MDB&M					RAISIN CITY OIL FIELD, SAN JOAQUIN VALLEY																
Irrigation well	15S/17E-1H1	7-28-55	72	549				32 / 1.39					68 / 1.92							186		USGS
James Irrigation District	15S/17E-10J2	7-28-55	74	1110				234 / 10.18					220 / 6.20							26		USGS
Signal Oil Co. Domestic well	15S/17E-11P1	9-29-55		521				39 / 1.70					66 / 1.86							164		USGS
Irrigation well	15S/17E-12J1	10-8-55	72	533				34 / 1.48					56 / 1.58			0.10				185		USGS
		9-27-56	70	578				36 / 1.56					74 / 2.09			0.00				196		DWR
Dunlop & Graham Domestic well and Industrial	15S/17E-13G1	9-29-55		7160	8.1			864 / 37.58		0 / 0.00	118 / 1.93	2.0 / 0.04	2420 / 68.24							1630	1530	USGS
		10-18-55	69	6180				711 / 30.93					2010 / 56.68			0.33				1420		USGS
		9-27-56	76	4502				552 / 24.00					1376 / 38.80			0.24				860		DWR
Seaboard Oil Company Domestic well	15S/17E-13R1	9-29-55		314				50 / 2.18	5.7 / 0.15	0 / 0.00	137 / 2.25	8.0 / 0.17	26 / 0.73							40	0	USGS
		9-27-56		350				49 / 2.13					26 / 0.73			0.02				36		DWR
Seaboard Oil Company Domestic and Irrigation	15S/17E-14G1	9-29-55		5590				602 / 26.19					1790 / 50.48							1300		USGS
		10-18-55	71	8320				946 / 41.15					2700 / 76.14			2.7				2100		USGS
Irrigation well	15S/17E-15A1	7-28-55	71	804				86 / 3.74					146 / 4.12							178		USGS
Signal Oil Company Domestic well	15S/17E-15B1	9-29-55		566				69 / 3.00					94 / 2.65							110		USGS
		10-18-55	67	580				72 / 3.13					96 / 2.71			0.00				151		USGS

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

a Determined by addition of constituents
b Gravimetric determination

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M				RAISIN CITY OIL FIELD, SAN JOAQUIN VALLEY (Continued)																	
Signal Oil Company Domestic well	15S/17E-15B1	9-27-56	75	691				76 3.30					118 3.33			.02				151		DWR
Irrigation well	15S/17E-15F1	9-27-56	70	631	8.1	12.0 0.60	1.7 0.14	117.0 5.09	4.6 0.12	0 0.00	153.00 2.51	15.00 0.31	108.00 3.05	2.00 0.03	0.10 0.01	0.29	66	402	86	37		DWR
Irrigation well	15S/17E-15H1	10-18-55	73	1070				214 9.39					192 5.41			1.4				35		USGS
James Irrigation District Irrigation well	15S/17E-15H1	7-28-55	71	554				104 4.52					86 2.43							31		USGS
James Irrigation District Irrigation well	15S/17E-22R1	7-28-55	70	480				75 3.26					74 2.09							63		USGS
		10-18-55	70	716				99 4.31					120 3.38			0.12				125		USGS
Irrigation well	15S/17E-34J1	9-27-56	69	431	8.0	7.0 0.349	0.6 0.049	89.0 3.871	2.5 0.064	0 0.000	147.00 2.409	22.00 0.458	48.00 1.354	0.90 0.015	0.50 0.26	0.21	58	301	89	20		DWR
James Irrigation District Irrigation well	15S/18E-16G1	7-28-55	74	362				40 1.74					32 0.90							86		USGS
James Irrigation District Irrigation well	15S/18E-20G1	7-28-55	73	389				55 2.39					42 1.19							62		USGS

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M				DEVILS DEN OIL FIELD, SAN JOAQUIN VALLEY																	
Barker Ranch Irrigation well	24S/18E-33M2	10-19-55	73	1650				194 / 8.44					95 / 2.68			1.8				548		USGS
		6-26-56	74	1678																		DWR
Barker Ranch Irrigation well	24S/18E-33N1	10-19-55	73	1510				185 / 8.05					106 / 2.99			1.8				474		USGS
		6-26-56	72	1532				187 / 8.13					110 / 3.10			1.5				435		DWR
Irrigation well	24S/18E-33Q2	7-27-55	74	1600	8.0	73 / 3.64	82 / 6.76	176 / 7.65	4.0 / 0.10	0 / 0.00	274 / 4.49	514 / 10.70	84 / 2.37	26 / 0.42	0.2 / 0.01	1.6	42	1140	42	520	295	USGS
K. K. Ranch Irrigation well	25S/18E-2N2	7-27-55	70	4250				620 / 26.96					275 / 7.76							1320		USGS
		10-19-55	69	4160				611 / 26.58					265 / 7.47			13				1260		USGS
		3-20-56	70	4340	7.9	278 / 13.87	157 / 12.93	489 / 21.27	8.0 / 0.20	0 / 0.00	380 / 6.23	1650 / 34.35	277 / 7.81	19 / 0.31	0.6 / 0.03	5.7	43	3110	44	1340	1030	USGS
		6-26-56	69	4250				566 / 24.61					292 / 8.23			5.1				1360		DWR
Irrigation well	25S/18E-3D1	3-20-56	74	1670	8.0	74 / 3.69	86 / 7.07	178 / 7.74	3.6 / 0.09	0 / 0.00	280 / 4.59	490 / 10.20	111 / 3.13	19 / 0.31	0.4 / 0.02	2.1	46	1150	42	538	308	USGS
K. K. Ranch Irrigation well	25S/18E-3E1	7-27-55	73	1640	8.0	72 / 3.59	84 / 6.91	187 / 8.13	3.8 / 0.10	0 / 0.00	278 / 4.56	517 / 10.76	96 / 2.71	18 / 0.29	0.1 / 0.01	1.7	41	1160	43	525	297	USGS
		10-19-55	74	1670				187 / 8.13					97 / 2.74			1.8				528		USGS
		6-26-56	73	1763				185 / 8.06					113 / 3.18			1.5				565		DWR
K. K. Ranch Irrigation well	25S/18E-3M3	7-27-55	75	1950				200 / 8.70					122 / 3.44							692		USGS
		10-19-55	75	1920				200 / 8.70					108 / 3.05			1.7				680		USGS

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	INDEX					DEVILS DEN OIL FIELD, SAN JOAQUIN VALLEY (Continued)																
A. M. Baker Domestic well	25S/18E-3N2	10-19-55	70	4130				378 / 16.44					646 / 18.22			2.1				1630		USGS
		6-26-56	70	3400				301 / 13.1					503 / 14.2			1.7				1350		DWR
K. K. Ranch Irrigation well	25S/19L-6D1	7-27-55	74	2740				370 / 16.09					215 / 6.06							786		USGS
		10-19-55	74	2730				374 / 16.27					204 / 5.75			2.7				805		USGS
K. K. Ranch Irrigation well	25S/19E-6D2	7-27-55	79	3440				482 / 20.96					330 / 9.31							930		USGS
		10-18-55	78	3240				446 / 19.40					294 / 8.29			2.1				893		USGS
		6-26-56	78	3820				508 / 22.1					415 / 11.7			2.7				1100		DWR
K. K. Ranch Irrigation well	25S/19E-6N1	7-27-55	78	3540				451 / 19.61					305 / 8.60							1180		USGS
		10-18-55	77	3370				420 / 18.27					270 / 7.61			2.3				1170		USGS
		6-26-56	79	3545				439 / 19.1					328 / 9.25			2.8				1185		DWR
K. K. Ranch Irrigation well	25S/19E-7N2	7-27-55	78	5240				829 / 36.05					445 / 12.55							1420		USGS
		10-18-55	78	5140				840 / 36.54					435 / 12.27			6.6						USGS
		3-7-56	74	5240	8.1	159 / 7.93	246 / 20.27	829 / 36.06	13 / 0.33	0 / 0.00	464 / 7.60	2030 / 42.26	446 / 12.58	10 / 0.16	0.6 / 0.03	7.4	72	4040	56	1410	1030	USGS
K. K. Ranch Irrigation well	25S/19L-7P1	7-27-55	80	5250				829 / 36.05					450 / 12.69							1420		USGS
		10-18-55	77	5180				840 / 36.54					392 / 11.05			3.7				1680		USGS
		3-6-56	76	5280	7.9	178 / 8.88	263 / 21.62	810 / 35.24	12 / 0.31	0 / 0.00	515 / 8.44	2240 / 46.64	395 / 11.14	22 / 0.35	0.4 / 0.02	7.9	41	4220	53	1520	1100	USGS
		6-26-56	77	5328				768 / 33.4					411 / 11.6			7.9				1540		DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M				EDISON OIL FIELD, SAN JOAQUIN VALLEY																	
Kern Growers Exchange Domestic and Irrigation well	29S/28E-36J1	7-12-55		3270									460 12.96			0.10						DWR
		10-19-55	76	3430				200 8.70					525 14.80			0.17				1610		USGS
		3-24-56		1133				77 3.36					165 4.66							389		DWR
W. S. Buchner Domestic and Irrigation well	29S/29E-32L1	7-12-55	79	678									44 1.25			0.10						DWR
		10-19-55	79	666				79 3.44					42 1.18							175		USGS
		3-25-56		749				50 2.18					33 0.94							265		DWR
Charles Samules Domestic and Irrigation well	30S/28E-11R2	10-19-55	72	463				44 1.91					22 0.62							136		USGS
		3-23-56		1154				79 3.42					157 4.43							400		DWR
Douglas Oil Co. Industrial well	30S/28E-25A1	1-10-56	72	540	8.3	55 2.74	11 0.94	46 2.00	4.3 0.11	2 0.07	257 4.21	41 0.85	21 0.59	1.5 0.02	0.3 0.02	0.21	27	336	35	184	0	USGS
		6-27-56		525	8.2	54 2.69	13 1.05	46 2.00	4.7 0.12	0 0.00	263 4.31	38 0.79	21 0.59	1.5 0.02	0.2 0.01	0.14	26	335	34	187	0	USGS
Marvin Berry Irrigation well	30S/29E-4Q1	10-20-55	77	631				66 2.87					32 0.90							192		USGS
Bender Irrigation well	30S/29E-5R1	7-12-55	76	1270									146 4.11			0.11						DWR
		10-20-55	70	1570				90 3.92					205 5.78							603		USGS
Fred Belzer Irrigation and Domestic well	30S/29E-6J1	7-12-55	78	677									42 1.18			0.14						DWR
		10-19-55	72	676				58 2.52					40 1.13							222		USGS

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR) as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M				EDISON OIL FIELD, SAN JOAQUIN VALLEY (Continued)																	
Anna Alexis Irrigation well	30S/29E-7R1	10-19-55	72	636				44 / 1.91					47 / 1.33							226		USGS
E. Loveland Irrigation well	30S/29E-8R1	7-12-55	72	869									74 / 2.08			0.12						DWR
		10-19-55	71	787				48 / 2.09					58 / 1.64			0.01				296		USGS
Grayson Irrigation well	30S/29E-10L1	7-14-55	71	722									67 / 1.88			0.13						DWR
		10-20-55	67	638				53 / 2.31					52 / 1.47							212		USGS
Irrigation well	30S/29E-11N2	3-23-56		1141				77 / 3.36					157 / 4.43							381		DWR
Marvin Berry Irrigation well	30S/29E-16N1	7-14-55		824									57 / 1.59			0.11						DWR
		10-20-55	69	841				53 / 2.31					53 / 1.49							319		USGS
Howard Porter Irrigation well	30S/29E-20A1	7-13-55	72	689									45 / 1.27			0.10						DWR
		3-25-56		1098				79 / 3.45					157 / 4.43							360		DWR
J. Guimara Domestic and irrigation well	30S/29E-22A1	10-20-55	71	601				46 / 2.00					53 / 1.49							205		USGS
Domestic and irrigation well	30S/29E-22J1	10-20-55	69	1050				57 / 2.48					84 / 2.37							408		USGS

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MDB&M					EDISON OIL FIELD, SAN JOAQUIN VALLEY(Continued)																
H. H. Kettler Irrigation well	30S/29E-24P1	7-20-55	71	788									57 1.62			0.64						DWR
		10-20-55	73	697				57 2.48					51 1.44							241		USGS
		3-24-56		1130				80 3.46					157 4.43							374		DWR
M. H. Kettler & Son Irrigation well	30S/29E-25N1	10-20-55	65	889				58 2.52					67 1.89							321		USGS
Irrigation well	30S/29E-27A1	7-13-55	68	882									55 1.55			0.14						DWR
Domestic and Irrigation well	30S/29E-27J1	7-13-55	67	808									50 1.42			0.17						DWR
		10-20-55	67	662				47 2.04					30 0.85							241		USGS
A. Kirschenman Domestic and Irrigation well	30S/29E-34C1	7-13-55	67	913									71 2.0			0.16						DWR
		10-20-55	72	699				50 2.18					41 1.16							264		USGS
		3-27-56		815				49 2.15					49 1.39							312		DWR
Kovacovitch Irrigation well	30S/29E-35A1	7-20-55		977									75 2.12									DWR
Irrigation well	30S/29E-35C1	10-20-55	61	834				54 2.35					63 1.78							304		USGS
Irrigation well	30S/30E-8P1	10-20-55	73	613				90 3.92					34 0.96							108		USGS
		3-25-56		840				52 2.28					64 1.81							313		DWR
DiGiorio Fruit Company Irrigation well	31S/29E-1A1	7-20-55	66	687									32 0.91			0.51						DWR

a Determined by addition of constituents
Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	MOBIL				EDISON OIL FIELD, SAN JOAQUIN VALLEY (Continued)																	
DiGiorgio Fruit Company Irrigation well	31S/29E-10C1	7-20-55		738									35 / 0.98			0.21						DWR
		10-20-55	66	728				50 / 2.18					33 / 0.93							263		USGS
		3-25-56		741				50 / 2.18					34 / 0.95							276		DWR
DiGiorgio Fruit Company Irrigation well	31S/29E-10C1	3-25-56		898				57 / 2.5					52 / 1.48							335		DWR

a Determined by addition of constituents

b Gravimetric determination

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), o State Department of Water Resources (DWR) as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm[b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					LOWER MOJAVE RIVER-BARSTOW TO YERMO																
Union Pacific R. R. Co., Yermo Municipal well	9N/1E-11L1	5-19-55	72	515	8.3	47.0 / 2.35	9.1 / 0.75	49.9 / 2.17	1.7 / 0.04	3.0 / 0.10	207 / 3.39	32.6 / 0.68	33.7 / 0.95	1.9 / 0.03	0.4 / 0.02	0.15	14	300	41	155	0	PCC
Grey Phelps Wool Water Ranch Domestic well	9N/1E-15N1	5-19-55		820	8.4	67.0 / 3.35	13.8 / 1.14	89.0 / 3.87	2.8 / 0.07	3.0 / 0.10	268 / 4.40	105 / 2.19	63.9 / 1.80	6.8 / 0.11	0.4 / 0.02	0.47	15	504	45.7	225	0	PCC
		9-14-55		796	7.5					0 / 0.00	268 / 4.40		70 / 1.97							240	20	DWR
		6-1-56		950	7.8	84 / 4.20	13 / 1.05	111 / 4.81	2.4 / 0.06	0 / 0.00	299 / 4.90	133 / 2.77	83 / 2.35	12.3 / 0.20	0.3 / 0.02	0.32		606	48	313	68	DWR
Stuart C. Slack Domestic & Irrigation well	9N/2E-8F1	5-19-55	71	273	8.1	29.0 / 1.45	6.1 / 0.50	38.6 / 1.68	1.4 / 0.04	0 / 0.00	154 / 2.52	20.2 / 0.42	19.5 / 0.55	5.0 / 0.08	0.5 / 0.03	0.12	13	228	45.8	98	0	PCC
		12-18-56	64	330	7.8					0 / 0.00	149 / 2.45		20 / 0.56							90	0	TTL[d]
J. Stemacle Municipal well	9N/1W-5J1	5-19-55		1135	8.1	23.0 / 1.15	6.1 / 0.50	216 / 9.40	2.8 / 0.07	0 / 0.00	215 / 3.52	240 / 5.01	90.9 / 2.56	6.2 / 0.10	3.5 / 0.18	3.20	24	715	85	83	0	PCC
		9-14-55		1089	8.3					7 / 0.24	207 / 3.40		89 / 2.51							70	0	DWR
W. B. Price Domestic well	9N/1W-9G1	5-19-55		975	7.6	99.0 / 4.95	19.9 / 1.64	80.5 / 3.50	2.8 / 0.07	0 / 0.00	309 / 5.07	116 / 2.41	85.8 / 2.42	0.6 / 0.01	0.5 / 0.03	1.20	16	608	34.4	325	71.5	PCC
		9-14-55		1020	7.9					0 / 0.00	276 / 4.52		92 / 2.59							328	102	DWR
		4-18-56		968	7.9						344 / 5.65		83 / 2.35							315		DWR
		12-18-56		1305	7.7	103 / 5.15	28 / 2.30	138 / 6.00	2.3 / 0.06	0 / 0.00	336 / 5.50	246 / 5.13	106 / 2.99	0.6 / 0.01	0.5 / 0.03	1.25	22	884	44.5	373	98	TTL[d]
Bob Hetticks Domestic, Stock, & Irrigation well	9N/1W-10D1	5-19-55		806	7.6	67.0 / 3.35	12.6 / 1.04	86.4 / 3.75	2.4 / 0.06	0 / 0.00	253 / 4.15	132 / 2.74	51.4 / 1.45	0.6 / 0.01	0.5 / 0.03	0.17	14	480	45.8	220	12.5	PCC
		9-14-55		808	8.0					0 / 0.00	237 / 3.88		54 / 1.52							220	26	DWR
		4-18-56	69	615	7.85	50 / 2.50	9 / 0.75	72 / 3.12	2.2 / 0.06	0 / 0.00	220 / 3.60	84 / 1.74	39 / 1.10	4.5 / 0.07	0.4 / 0.02	0.13		278	48.3	163	0	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated
d Terminal Toastar - [illegible]oxy (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	SBB&M					LOWER MOJAVE RIVER-BARSTOW TO YERMO(Continued)																
Southern California Water Co. Municipal well	9N/2W-1F1	9-14-55		389	8.1	31 / 1.55	5 / 0.41	50 / 2.18	1.8 / 0.05	0 / 0.00	163 / 2.68	37 / 0.78	25 / 0.71	1.0 / 0.02	0.6 / 0.03	0.20		251	53.3	96	0	PCC
R. W. Dickerson Domestic well	10N/1W-32J1	5-19-55		507	7.6	48.0 / 2.40	9.1 / 0.75	61.0 / 2.65	2.4 / 0.06	0 / 0.00	210 / 3.45	65.8 / 1.37	36.9 / 1.04	1.2 / 0.02	0.5 / 0.03	0.15	14	333	45.3	158	0	PCC
		9-14-55		541	8.0					0 / 0.00	207 / 3.40		40 / 1.13							165	0	DWR
		4-18-56	69	654	7.6	65 / 3.24	13 / 1.07	72 / 3.13	3.1 / 0.08	0 / 0.00	237 / 3.88	105 / 2.19	52 / 1.47	0.3 / 0.01	0.6 / 0.03	0.20	25	445	41.5	216	22	DWR

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	SBB&M					COACHELLA VALLEY (LOWER COACHELLA AREA)																
Lester Roberson Domestic well	5S/7E-16K1	5-10-55		473	8.0	50.0 / 2.50	13.8 / 1.14	26.7 / 1.16	4.9 / 0.13	0 / 0.00	157 / 2.58	81.5 / 1.70	22.0 / 0.62	1.8 / 0.03	0.7 / 0.01	0.0	17	328	25.6	182	53	PCC
		9-15-55		384	8.4					1.0 / 0.32	134 / 2.20		16 / 0.45							150	24	DWR
		4-12-56	71	490	7.35					0 / 0.00	162 / 2.65		23 / 0.65							168	35.5	DWR
		9-19-56	80	400	8.0	43.2 / 2.16	8.3 / 0.68	25.8 / 1.12	4.3 / 0.11	0 / 0.00	161 / 2.64	48 / 1.00	16 / 0.45	1.2 / 0.02	0.8 / 0.04	0.1	21	280	27.5	142	10	TTL d
E. E. Zalay Domestic well	5S/7E-22K1	5-10-55		539	7.9	69.0 / 3.45	11.4 / 0.94	27.2 / 1.18	4.9 / 0.13	0 / 0.00	184 / 3.10	82.0 / 1.71	29.4 / 0.83	4.3 / 0.07	0.6 / 0.03	0.0	16	361	20.7	218	63	PCC
		9-15-55		576	8.0					0 / 0.00	190 / 3.12		31 / 0.87							242	86	DWR
		4-11-56	70	625	7.3					0 / 0.00	183 / 3.00		35 / 1.0							238	88	DWR
		9-18-56	74	625	7.6	73 / 3.65	13 / 1.03	31 / 1.34	5.4 / 0.14	0 / 0.00	131 / 2.15	121 / 2.52	48 / 1.35	4.9 / 0.08	0.6 / 0.03	0.03		406	22	234	126.5	DWR
		9-18-56	74	615	8.0	83.2 / 4.16	16 / 1.31	34 / 1.48	4.9 / 0.13	0 / 0.00	178 / 2.92	128.6 / 2.68	50 / 1.41	3.8 / 0.06	0.3 / 0.02	0.0	24	464	21	274	128	TTL d
Joe N. Ramirez & Sons Domestic & Irrigation well	5S/7E-33C1	5-10-55		740	7.9	95.0 / 4.75	11.4 / 0.94	40.5 / 1.76	5.3 / 0.14	0 / 0.00	167 / 2.74	139 / 2.89	51.5 / 1.45	42.2 / 0.68	0.3 / 0.02	0.0	16	565	23.2	285	148	PCC
		9-15-55		819	7.6					0 / 0.00	161 / 2.64		69 / 1.95							356	224	DWR
		4-12-56	64	810	7.4					0 / 0.00	183 / 3.0		55 / 1.55							292	142	DWR
		10-15-56		850	7.6	92 / 4.60	20 / 1.63	66.2 / 2.88	5.9 / 0.15	0 / 0.00	207.4 / 3.40	161.8 / 3.37	58 / 1.63	49.2 / 0.79	0.2 / 0.01	0.0	24	636	31.1	311.5	141.5	TTL d
Mitchell Land & Improvement Co. Domestic well	5S/8E-31D1	5-10-55		473		56.0 / 2.80	6.1 / 0.50	33.1 / 1.44	4.6 / 0.12	0 / 0.00	145 / 2.38	72.9 / 1.52	30.9 / 0.87	9.3 / 0.15	0.5 / 0.03	0.0	14	314	29.7	165	46	PCC
		9-15-55		434	8.3					7 / 0.24	124 / 2.04		25 / 0.71							154	40	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

a Determined by addition of constituents
b Gravimetric determination
Analysis by U. S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated
Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC. ppm	Analyzed by c
	SBB&M					COACHELLA VALLEY (LOWER COACHELLA AREA-Continued)																
Mitchell Land & Improvement Co. Domestic well	5S/8E-31D1	4-11-56	72	453	7.2					0 0.00	146 2.40		25 0.70							150	20	DWR
		9-19-56	78	450	8.0	53.6 2.68	6.3 0.52	31.7 1.38	4.7 0.12	0 0.00	146.4 2.40	68.2 1.42	32 0.90	5 0.08	0.7 0.04	0.1	23	320	29.4	160	40	TTL d
E. M. Holm Domestic well	5S/8E-33N1	5-10-55		617	7.9	31.2 1.56	4.8 0.40	92.0 4.00	4.6 0.12	0 0.00	145 2.38	136 2.84	28.4 0.80	0.0 0.00	4.2 0.22	0.4	16	408	65.7	88	0	PCC
		9-15-55		574	8.1					0 0.00	142 2.32		28 0.79							90	0	DWR
		9-19-56	84	600	7.9	30 1.50	3.5 0.29	95.7 4.16	5.4 0.14	0 0.00	146.4 2.40	136.4 2.84	28 0.79	0.0 0.00	1.9 0.01		24	428	68.5	90	0	TTL d
Gifford Phillips Domestic well	6S/7E-25E1	5-10-55		1340	7.7	136 6.80	18.0 1.49	99.0 4.30	4.6 0.12	0 0.00	115 1.89	161 3.35	258 7.27	6.8 0.11	0.5 0.03	0.0	14	1046	33.8	414	319.5	PCC
		9-15-55		2932	8.1	336 16.77	82 6.74	200 8.70	7.4 0.19	0 0.00	102 1.68	297 6.19	848 23.91	11.9 0.19	0.8 0.04	0.06		2340	26.8	1178	1094	DWR
		4-11-56	60	432	7.5	33 1.65	3 0.25	48 2.15	3.2 0.08	0 0.00	107 1.75	57 1.18	37 1.05	5.3 0.09	1.2 0.06	0.03		263	52.0	95	7.5	DWR
		9-19-56	90	620	7.9	66.4 3.32	7.8 0.64	73.1 3.18	3.9 0.10	0 0.00	104.9 1.72	113.3 2.36	107.2 3.02	3.2 0.05	0.4 0.02	0.1	23	464	44.0	198	112	TTL d
M. R. Shepard Domestic well	6S/8E-7P1	5-10-55		435	8.0	49.0 2.45	6.7 0.55	30.8 1.34	3.1 0.08	0 0.00	127 2.09	54.7 1.14	37.9 1.07	5.6 0.09	0.4 0.02	0.0	15	290	30.4	150	45.5	PCC
		9-15-55		515	8.1	62 3.09	5.0 0.41	34 1.48	1.8 0.05	0 0.00	124 2.04	70 1.45	51 1.44	10.4 0.17	0.4 0.02	0.0		305	29.4	175	73	DWR
		4-11-56	72	549	7.0					0 0.00	131 2.15		51 1.45							178	70.5	DWR
		9-19-56	78	500	7.9	58.8 2.94	6.6 0.54	35.2 1.53	3.1 0.08	0 0.00	136.6 2.24	72.5 1.51	46.2 1.30	2.7 0.04	0.4 0.02	0.0	24	340	30.1	174	62	TTL d

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million												Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$		Analyzed by [c]
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)			Total ppm	Non-carbonate ppm	
	SBB&M					COACHELLA VALLEY (LOWER COACHELLA AREA—Continued)																
W. C. and Joe E. Stroube Domestic well	6S/8E-27H1	9-15-55		222	7.9	14 / 0.70	0.0 / 0.00	33 / 1.44	2.2 / 0.06	0 / 0.00	88 / 1.44	25 / 0.53	9 / 0.25	0.5 / 0.01	0.7 / 0.04	0.06		155	65.5	35	0	DWR
		4-11-56	70	252	7.95	18 / 0.9	0.0 / 0.00	37 / 1.59	2.6 / 0.07	0 / 0.00	104 / 1.70	27 / 0.57	9 / 0.25	2.4 / 0.04	0.7 / 0.04	0.05		147	62.0	45	0	DWR
		9-19-56	80	240	8.0	13.6 / 0.68	1 / 0.08	34.5 / 1.50	2.4 / 0.06	0 / 0.00	92.7 / 1.52	27.4 / 0.54	6 / 0.17	0.9 / 0.02	0.6 / 0.05	0.1	18	160	64.3	38	0	TTL [d]
Nazernig Karahadian Ranch Domestic & Irrigation well	6S/9E-30C1	9-15-55		256	8.0	7.0 / 0.35	1.0 / 0.08	50 / 2.18	1.3 / 0.03	0 / 0.00	85 / 1.40	38 / 0.79	10 / 0.28	6.0 / 0.10	2.0 / 0.11	0.04		174	83.0	21	0	DWR
		4-11-56	78	267	8.15	6.0 / 0.3	0.0 / 0.00	51 / 2.23	1.3 / 0.03	0 / 0.00	92 / 1.50	34 / 0.70	11 / 0.30	1.4 / 0.02	2.3 / 0.12	0.06		262	87	15	0	DWR
		9-19-56	88	251	8.0	7.2 / 0.36	1.5 / 0.12	48.1 / 2.09	2.0 / 0.05	0 / 0.00	90.3 / 1.48	36 / 0.75	12 / 0.34	0.0 / 0.00	1.0 / 0.05	0.1	18	168	79.8	24	0	TTL [d]
Vessey Brothers Domestic well	7S/8E-22M1	5-11-55		594	8.5	20.0 / 1.00	4.2 / 0.35	95.0 / 4.13	1.9 / 0.05	3.6 / 0.12	49.4 / 0.81	49.4 / 1.03	120 / 3.39	2.5 / 0.04	0.6 / 0.05	0.0	16	344	74.7	68	21.5	PCC
		4-11-56	82	632	8.1					0 / 0.00	58 / 0.95		124 / 3.50							60	12.5	DWR
		9-19-56		830	8.10	45.6 / 2.28	4.9 / 0.40	148.4 / 6.45	4.7 / 0.12	0 / 0.00	75.6 / 1.24	84 / 1.75	226 / 6.37	3.7 / 0.06	0.2 / 0.01	0.0	16	596	69.7	134	72	TTL [d]
C. Charles Crockett Domestic & Irrigation well	7S/9E-16K1	5-11-55		1340	8.4	34.0 / 1.70	9.1 / 0.75	257 / 11.10	1.9 / 0.05	3.0 / 0.10	207 / 3.40	368 / 7.66	62.8 / 1.77	3.1 / 0.05	12.0 / 0.63	0.52	19.0	855	81.6	128	0	PCC
		9-15-55		704	8.1	11 / 0.55	3 / 0.25	152 / 6.61	3.3 / 0.08	0 / 0.00	166 / 2.72	174 / 3.63	27 / 0.76	3.5 / 0.56	8.2 / 0.43	0.24		450	88.6	40	0	DWR
		4-11-56	70	540	8.0	4.0 / 0.20	0.0 / 0.00	113 / 4.90	0.8 / 0.02	0 / 0.00	122 / 2.0	124 / 2.59	11 / 0.30	1.3 / 0.02	6.0 / 0.32	0.10		318	96	10	0	DWR
		9-20-56		1275	8.2	27 / 1.35	5.0 / 0.45	277 / 12.06	2.8 / 0.07	0 / 0.00	204 / 3.35	379 / 7.89	64 / 1.8	3.3 / 0.05	8.80 / 0.46	0.44		770	87	90	0	DWR

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U. S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SEB&N					EAST COASTAL PLAIN PRESSURE AREA																
Mrs. Olive Mason Domestic and Irrigation well	5S/11W-21M3	2-17-55		395	7.4	25 / 1.24	2 / 0.13	51 / 2.22	2 / 0.04		162 / 2.70	33 / 0.68	17 / 0.48	16 / 0.26	0.72 / 0.04	.04		238	61	69		OCDA**
		10-10-55		371	7.6																	OCDA**
		4-11-56		358	8.0						158 / 2.59		13 / 0.37									OCDA**
		9-11-56		370	8.2						154 / 2.52		12 / 0.34									OCDA**
		12-5-56		368	8.1					0 / 0.00	168 / 2.75		14 / 0.40							65	0	DWR
Anderson Mutual Water Company Domestic well	5S/11W-21N3	9-22-55		462	7.9	50 / 2.48	2 / 0.19	43 / 1.87	6 / 0.15		186 / 3.05	52 / 1.09	20 / 0.55	3 / 0.05	32 / 0.02	10		270	40	134		OCDA**
		10-10-55		435	7.6																	OCDA**
		4-9-56		452	7.8						178 / 2.92		16 / 0.45									OCDA**
		9-11-56		473	8.0						176 / 2.89		17 / 0.48									OCDA**
		12-5-56		480	7.9	48 / 2.40	3 / 0.28	47 / 2.03	2.0 / 0.05	0 / 0.00	192 / 3.15	59 / 1.23	16 / 0.45	0.0 / 0.00	0.5 / 0.03	0.14		283	42.5	134	0	DWR
Harry C. Fulton Domestic well	5S/11W-25R2	2-23-55		668	7.8	30 / 1.52	31 / 2.59	51 / 2.19	3 / 0.08		272 / 4.46	31 / 1.52	31 / 0.87	1 / 0.02	0.6 / 0.03	0.11		406	34	206		OCDA**
		10-14-55		659	8.2																	OCDA**
		10-17-56		706	7.7						292 / 4.79		30 / 0.85									OCDA**
Oscar Stricklin Domestic and Irrigation well	5S/11W-26F4	2-23-55		852	7.5	108 / 5.42	12 / 1.02	50 / 2.18	4 / 0.11		210 / 3.45	160 / 3.34	66 / 1.85	6 / 0.10	0.6 / 0.03	0.03		546	25	322		OCDA**
		9-30-55		916	7.6	120 / 6.00	15 / 1.24	46 / 2.00	5 / 0.13		223 / 3.65	143 / 2.97	90 / 2.55			0.1		573	21	362		OCDA**
		5-7-56		908	7.8	108 / 5.42	16 / 1.32	40 / 1.74	5.9 / 0.15		199 / 3.26	147 / 3.06	95 / 2.68	15 / 0.24	0.2 / 0.01	0.16	19	622	20	337		OCDA**
		10-23-56		1127	7.8	134 / 6.70	25 / 2.08	64 / 2.78			201 / 3.28	137 / 2.85	164 / 4.65					664	24	439		OCDA**

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.
** Orange County Department of Agriculture (OCDA)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million — Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$ — Total ppm	Hardness as $CaCO_3$ — NC. ppm	Analyzed by[c]
	SBB&M					EAST COASTAL PLAIN PRESSURE AREA(Continued)																
Oscar Stricklin Domestic and Irrigation well	5S/11W-26F4	12-6-56		1130	7.9	133 / 6.65	31 / 2.55	45 / 1.97	3.9 / 0.10	0 / 0.00	238 / 3.90	134 / 2.79	161 / 4.55	7.8 / 0.13	0.2 / 0.01	0.03		734	17.5	460	267.5	DWR
Southern California Water Company Municipal well	5S/11W-26M1	10-13-56		2638	7.6																	OCDA**
		10-2-56		2888	7.7	195 / 9.75	44 / 3.67	340 / 14.78	11 / 0.28		203 / 3.80	172 / 3.58	698 / 19.68	Tr		Tr		1708	52	671		OCDA**
		12-6-56	68	2620	7.4	173 / 8.65	54 / 4.40	270 / 11.75	6.3 / 0.16	0 / 0.00	205 / 3.60	154 / 3.20	617 / 17.4	13.1 / 0.21	0.9 / 0.05	1.40		1622	46.5	665	415	DWR
W. S. Tubach Domestic well	5S/11W-27H4	10-11-55		1928	7.4																	OCDA**
		9-25-56		2163	7.7						243 / 3.98		421 / 11.87									OCDA**
		12-6-56		2145	7.6	229 / 11.45	38 / 3.15	143 / 6.20	6.7 / 0.17	0 / 0.00	278 / 4.55	159 / 3.32	457 / 12.9	8.6 / 0.14	0.2 / 0.01	0.70		1433	29.6	730	502.5	DWR
Sunset Land and Water Company Municipal well	5S/11W-29C1	10-10-55		323	7.8	9 / 0.46	1 / 0.02	66 / 2.87	1 / 0.03		156 / 2.56	8 / 0.16	16 / 0.46	20 / 0.32	0.60 / 0.03	0.07		192	85	24		OCDA**
		10-11-55		318	7.8																	OCDA**
		9-26-56		318	8.4					9 / 0.30	147 / 2.41		13 / 0.37									OCDA**
		12-5-56	76	322	8.5	7 / 0.35	0.0 / 0.00	71 / 3.07	0.5 / 0.01	3.0 / 0.10	168 / 2.75	9.0 / 0.19	14 / 0.40	0.5 / 0.01	1.1 / 0.06	0.08		205	89.5	18	0	DWR
Signal Oil and Gas Company Industrial well	5S/11W-36B2	2-23-55		482	7.5	57 / 2.83	7 / 0.55	43 / 1.87	3 / 0.07		214 / 3.50	46 / 0.96	25 / 0.70	7.0 / 0.11	0.8 / 0.04	0.12		304	35	169		OCDA**
		10-13-55		501	7.7																	OCDA**
		4-6-56		501	7.7																	OCDA**
		10-17-56		508	7.9						203 / 3.33		19 / 0.54									OCDA**
Ivan Harper Domestic and Irrigation well	5S/11W-36P1	10-20-55		783	7.7																	OCDA**
		4-24-56		838	7.8	96 / 4.78	9 / 0.76	50 / 2.71	4 / 0.09		209 / 3.39	43 / 0.90	133 / 3.75	3 / 0.05	3 / 0.02	0.05	19	489	28	277		OCDA**
		10-17-56		960	7.9						199 / 3.26		143 / 4.03									OCDA**

o Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

** Orange County Department of Agriculture (OCDA)

ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SBBKM					EAST COASTAL PLAIN PRESSURE AREA (Continued)																
I. W. Hellman Ranch Domestic, Stock and Irrigation well	5S/12W-12C1	10-10-55		315	7.9																	OCDA**
		4-18-56		292	8.7	10.5 / 0.52	0.80 / 0.07	63.5 / 2.76	1.0 / 0.03	8.0 / 0.27	138 / 2.26	15.6 / 0.32	13.6 / 0.38				15.0	197	82	30	0	LBWD ***
		5-4-56		318	7.9						143 / 2.34		14 / 0.39									OCDA**
		10-1-56		318	8.8					16 / 0.53	122 / 2.00		13 / 0.37									OCDA**
H. J. Lamb Domestic well	6S/10W-6L2	10-19-55		1285	7.8	158 / 7.90	17 / 1.42	65 / 2.82	1.85 / 0.05		183 / 3.00	26 / 0.53	332 / 9.28	6 / 0.09	0.24 / 0.01	0.8		891	23	466		OCDA**
		4-25-56		2298	7.6	281 / 14.05	27 / 2.27	95 / 4.13	5 / 0.13		183 / 3.00	36 / 0.67	632 / 17.82	Tr	0.3 / 0.02	0.06	18	1348	20	816		OCDA**
		9-24-56		3227	7.6	483 / 24.15	69 / 5.75	84 / 3.65	8 / 0.21		205 / 3.36	29 / 0.60	1034 / 29.16			0.0		2022	11	1415		OCDA**
		9-27-56				368 / 18.40		92 / 4.00					856 / 24.14						14			OCDA**
Alban Holtz Domestic well	6S/10W-7G1	10-24-55		1485	7.6	168 / 8.40	21 / 1.73	61 / 2.65	5.3 / 0.13		178 / 2.92	12 / 0.24	379 / 10.70	0.7 / 0.01	0.3 / 0.02			1015	19	507		OCDA**
		3-29-56		2824	7.4	344 / 17.18	37 / 3.05	105 / 4.57	8 / 0.21		83 / 1.36	1 / 0.03	853 / 24.05	2 / 0.03	0.02 / 0.01	0.07	18	1818	18	1012		OCDA**
Farnsworth Brothers Domestic well	6S/10W-7L1	3-29-56		1848	7.8	209 / 10.45	24 / 1.95	100 / 4.35	8 / 0.19		183 / 3.00	1 / 0.02	502 / 14.16	2 / 0.04	0.03 / 0.02	0.01	11	1135	26	620		OCDA**
City of Newport Beach Municipal well	6S/10W-8D9	10-25-55		481	7.5	46 / 2.32	5 / 0.41	43 / 0.87	2.7 / 0.07		2.07 / 3.40	16 / 0.33	38 / 1.06	1.3 / 0.0	0.63 / 0.03	0.16		306	40	137		OCDA**
		9-27-56		521	7.9						203 / 3.33		43 / 1.21									OCDA*
Huntington Beach Golf Course Irrigation and Domestic well	6S/11W-3R2	10-21-55		887	7.8	25 / 1.24	5 / 0.40	164 / 7.15	2 / 0.04		325 / 5.31	0.5 / 0.01	107 / 3.04	29 / 0.47	0.85 / 0.05	0.42		540	85	82		OCDA**
		9-25-56		950	8.0					10 / 0.33	322 / 5.28		119 / 3.36									OCDA**
		12-14-56	72	985	8.0	31 / 1.55	8 / 0.65	168 / 7.30	2.2 / 0.06	0 / 0.00	354 / 5.8	3 / 0.05	138 / 3.9	1.6 / 0.03	0.7 / 0.04	0.11		574	76.3	108	0	DWR

a Determined by addition of constituents

b Gravimetric determination

Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

** Orange County Department of Agriculture (OCDA)

*** Long Beach Water Department (LBWD)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M				EAST COASTAL PLAIN PRESSURE AREA (Continued)																	
E. F. Farnsworth Irrigation well	6S/11W-12F3	3-29-56		7261	7.3	901 / 45.06	79 / 6.58	436 / 19.87	11 / 0.28		132 / 2.17	27 / 0.55	2433 / 68.33	12 / 0.20	0.02 / 0.00	0.01	14	4828	28	2582		OCDA**
		9-21-56		7200	7.5						117 / 1.65		2638 / 74.39									OCDA**
urfland Oil Company Domestic well	6S/11W-12Q1	10-26-55		3110	7.7	137 / 6.84	34 / 2.81	362 / 15.75	7.6 / 0.20		124 / 2.06	16 / 0.33	910 / 25.70	0.60 / 0.01	0.78 / 0.04	0.34		1887	61	483		OCDA**

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

** Orange County Department of Agriculture (OCDA)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M							CHINO BASIN														
Fontana Union Water Co. Domestic & Irrigation well	1S/5W-7N1	4-12-56	58	338	7.9	52 / 2.6	5 / 0.45	12 / 0.51	2.3 / 0.06	0 / 0.00	183 / 3.0	22 / 0.45	5 / 0.15	5.2 / 0.08	0.3 / 0.02	0.02		202	14	153	3	DWR
		12-20-56		420	7.9	52 / 2.6	10 / 0.82	23 / 1.00	2.0 / 0.05	0 / 0.00	189 / 3.10	10 / 0.21	15 / 0.42	37 / 0.60	0.2 / 0.01	0.05	18	272	22.4	171	16	TTL [d]
S. &.S. Ranch Domestic & Irrigavion Well	1S/6W-29R1	12-6-55	64	415	7.8	54 / 2.7	5 / 0.45	41 / 1.77	1.4 / 0.04	0 / 0.00	198 / 3.25	41 / 0.86	21 / 0.6	16.4 / 0.26	0.1 / 0.01	0.0		229	36	158	0	DWR
		4-12-56	53	348	7.8						200 / 3.28		22 / 0.62							164		DWR
		12-20-56		410	8.0					0 / 0.00	195 / 3.20		28 / 0.79							163	3	TTL [d]
Peach Park Water Co. Domestic & Irrigation well	1S/7W-28R1	5-27-55		362	7.9	45 / 2.25	10.8 / 0.89	14.8 / 0.64	1.0 / 0.03	0 / 0.00	179 / 2.94	14.4 / 0.30	14.6 / 0.41	8.7 / 0.14	0.3 / 0.02	0.05	22	220	16.8	157	10	PCC
		8-17-55		340	7.4					0 / 0.00	176 / 2.88		11 / 0.31							156	12	DWR
		4-12-56	64	359	7.4	45 / 2.25	9 / 0.75	15 / 0.65	1.1 / 0.03	0 / 0.00	183 / 3.0	13 / 0.27	9 / 0.25	19.2 / 0.31	0.2 / 0.01	0.07		234	18	150	0	DWR
Wilder and Camel Domestic & Irrigation well	1S/7W-34M1	5-27-55		408	8.1	51 / 2.25	12.6 / 1.04	17.9 / 0.78	1.4 / 0.04	0 / 0.00	201 / 3.30	12.5 / 0.26	17.1 / 0.48	22.3 / 0.36	0.3 / 0.02	0.05	27	264	17.6	180	15	PCC
		8-17-55		362	8.3					10 / 0.32	166 / 2.72		14 / 0.39							165	13	DWR
		4-12-56	66	437	7.35					0 / 0.00	214 / 3.5		16 / 0.45							183	8	DWR
		12-20-56	68	410	7.6					0 / 0.00	215 / 3.53		23 / 0.65							169	0	TTL [d]
P. J. Crevolin Domestic & Irrigation well	2S/7W-10M1	5-27-55		452	7.5						161 / 2.63		28.4 / 0.84									PCC
		8-17-55		408	8.2					12 / 0.40	166 / 2.72		22 / 0.62							198	43	DWR
		4-12-56	54	490	7.5					0 / 0.00	204 / 3.35		23 / 0.65							202	34.5	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					CHINO BASIN(Continued)																
Pietro Enrico Domenico Enrico Domestic well	2S/7W-15A1	5-27-55		335	8.3	39.0 1.95	10.8 0.89	17.7 0.77	1.7 0.04	1.8 0.06	181 2.96	15.8 0.33	9.9 0.28	5.6 0.09	0.1 0.01	0.0	25	195	21.2	142	0	PCC
		4-12-56	54	359	7.6					0 0.00	195 3.20		7 0.20							140	0	DWR
		12-20-56		340	8.1	40 2.00	12 0.98	21 0.91	2.0 0.05	0 0.00	194 3.18	16 0.33	13 0.37	4 0.07	0.1 0.01	0.0	29	228	23.1	149	0	TTL[d]
C. T. Merril Domestic & Irrigation well	2S/7W-21L1	4-12-56	57	736	7.85	91 4.55	23 1.90	35 1.50	2.0 0.05	0 0.00	265 5.35	38 0.80	28 0.8	64.3 1.04	0.1 0.01	0.0	0.0	481	19	323	55.5	DWR
		12-20-56		735	7.90	80 4.02	31 2.55	30 1.30	2.0 0.05	0 0.00	317 5.20	46 0.96	37 1.04	59 0.95	0.2 0.01	0.0	25	500	16.4	329	69	TTL[d]
A. Omlin Domestic well	2S/7W-23E1	4-13-56	64	1250	7.25					0 0.00	546 8.95		71 2.0							605	157.5	DWR
Luginbill and Imbach Domestic well	2S/7W-27A1	4-13-56	60	1040	7.5	146 7.3	38 3.10	37 1.61	2.0 0.05	0 0.00	533 8.75	57 1.19	48 1.35	51.7 0.83	0.1 0.01	0.0		675	13	520	82.5	DWR
		12-15-56		1015	7.8					0 0.00	5.27 8.64		56 1.58							524	92	TTL[d]

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					BUNKER HILL BASIN																
Delman Water Company Municipal well	1N/4W-29E1	8-9-56		495	8.1	57 / 2.84	17.5 / 1.43			0 / 0.00	232 / 3.80		11 / 0.32							214	23.5	TTL[d]
Delman Water Company Municipal well	1 N/4W-29E3	9-20-55	68	477	7.8	77 / 3.84	16 / 1.32	13 / 0.57	4.2 / 0.11	0 / 0.00	234 / 3.84	60 / 1.24	9.0 / 0.25	23.0 / 0.38	0.6 / 0.03	0.4		290	9.8	258	66	DWR
		3-14-56	68	588	7.7	78 / 3.89	20 / 1.64	13 / 0.57	3.6 / 0.09	0 / 0.00	239 / 3.92	72 / 1.50	10 / 0.28	22.0 / 0.36	0.5 / 0.03	0.18		390	9.2	277	81	DWR
		9-13-56		572	7.6	86 / 4.29	19 / 1.56	13 / 0.57	3.6 / 0.09	0 / 0.00	246 / 4.04	82 / 1.71	11 / 0.31	20.25 / 0.33	0.5 / 0.03	0.0	25	438	8.7	293	91	DWR
Delman Water Company Municipal well	1N/4W-29F1	9-13-56		528	7.4	77 / 3.84	17 / 1.40	12 / 0.52	3.7 / 0.10	0 / 0.00	251 / 4.12	56 / 1.17	8 / 0.23	13.8 / 0.22	0.4 / 0.02	0.04	25	350	8.9	260	54	DWR
C. W. Knight Irrigation and Domestic well	1N/4W-29L1	9-27-55		463	7.8	62 / 3.09	15 / 1.23	12 / 0.52	3.0 / 0.08	0 / 0.00	227 / 3.72	39 / 0.81	10 / 0.28	6.4 / 0.10	0.6 / 0.03	0.04		254	10.6	216	30	DWR
		3-27-56		396	8.0	52 / 2.59	15 / 1.23	13 / 0.57	3.4 / 0.09	0 / 0.00	220 / 3.60	32 / 0.67	7 / 0.20	3.8 / 0.06	0.6 / 0.03	0.09		260	12.7	191	11	DWR
		9-13-56		532	7.7	75 / 3.74	17 / 1.40	14 / 0.61	3.6 / 0.09	0 / 0.00	244 / 4.00	62 / 1.32	8 / 0.23	15.3 / 0.25	0.5 / 0.03	0.01	25	345	10.4	257	57	DWR
Muscoy Mutual Water Company Municipal well	1N/5W-23A2	9-27-55		502	7.7	66 / 3.29	15 / 1.23	16 / 0.70	2.2 / 0.06	0 / 0.00	229 / 3.76	55 / 1.14	11 / 0.31	10.2 / 0.16	0.5 / 0.03	0.04		292	13.2	226	38	DWR
		3-14-56	63	518	7.9	62 / 3.09	18 / 1.48	17 / 0.74	2.4 / 0.06	0 / 0.00	234 / 3.84	60 / 1.20	10 / 0.28	4.8 / 0.08	0.4 / 0.02	0.08		345	13.7	229	37	DWR
		9-12-56		495	7.4	66 / 3.29	17 / 1.40	17 / 0.74	3.5 / 0.09	0 / 0.00	242 / 3.96	54 / 1.12	9 / 0.25	4.4 / 0.07	0.5 / 0.03	0.04	20	319	13.4	236	31	DWR
Norton Air Force Base Military well	1S/3W-8H2	8-31-55		300	7.4	40 / 2.0	9 / 0.75	20 / 0.89	22 / 0.06	0 / 0.00	149 / 2.45	37 / 0.77	11 / 0.30	5.8 / 0.09	0.7 / 0.04	0.12		178	24	138	15.5	DWR
		3-27-56		345	7.7	46 / 2.30	9 / 0.74	13 / 0.57	3.0 / 0.08	0 / 0.00	166 / 2.72	17 / 0.36	14 / 0.39	7.5 / 0.12	0.2 / 0.02	0.40		205	15.4	152	16	DWR
		5-3-56		399	7.9	55 / 2.76	10 / 0.81	13 / 0.57	2.8 / 0.07	0 / 0.00	190 / 3.12	21 / 0.43	18 / 0.51	9 / 0.15	0.4 / 0.02	0.48		262	15.7	179	23	SBCFCD[e]
		9-12-56		521	7.5	67 / 3.34	17 / 1.40	16 / 0.70	3.6 / 0.09	0 / 0.00	239 / 3.92	25 / 0.52	27 / 0.76	13.8 / 0.22	0.3 / 0.02	0.83	20	354	12.6	238	42	DWR
		12-7-56		483	7.3	71 / 3.55	12.0 / 1.09	17.0 / 0.74	3.7 / 0.10	0 / 0.00	234 / 3.84	26.0 / 0.54	26.0 / 0.73	11.0 / 0.18	0.4 / 0.02	0.88		335	13.5	232	40	SBCFCD[e]

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

e San Bernardino County Flood Control District (SBCFCD)

	Source (well number)	Date sampled	Temperature (°F)	Specific conductance (micromhos at 25°C)	pH	Mineral constituents: Dissolved in parts per million — Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Manganese (Mn)	Iron (Fe)	Silica (SiO_2)	Total dissolved solids in ppm b	Hardness as $CaCO_3$	Non-carbonate hardness	Analyses c
						DUNKEL HILL BASIN (Continued)																
[illegible]	1S/[illegible]	5-27-[illegible]		[illegible]	7.9	31 1.55	5.5 0.45	15.3 0.66	2.4 0.06	0 0.00	[illegible] [illegible]	7.2 0.15	10.0 0.31	[illegible]	[illegible]	0.18	18		152	24.3	[illegible]	[illegible]
		8-30-5[illegible]		266	7.7	31 1.55	7 0.58	17 0.74	2.9 0.07	0 0.00	[illegible] [illegible]	12 0.25	10 0.28	2.6 0.05	0.1 0.00	0.18	25		195	25.2	[illegible]	[illegible]	[illegible]
		3-27-56		273	7.8	31 1.55	7 0.58	16 0.70	3.0 0.08	0 0.00	[illegible] [illegible]	12 0.26	11 0.31	2.6 0.05	0.4 0.02	0.22			160	24.1	107	0	DWR
		9-16-56		2[illegible]	7.[illegible]	2[illegible] 1.[illegible]	6 0.49	14 0.61	2.7 0.07	0 0.00	[illegible] 2.14	12 0.27	7 0.20	2.7 0.04	0.4 0.02	0.12	20		161	23.3	97	0	DWR
Cook Orchards Irrigation well	1S/3W-16A1	8-31-55		267	7.3	34 1.7	7 0.58	13 0.56	1.7 0.04	0 0.00	134 2.2	24 0.49	5 0.15	1.9 0.03	0.5 0.03	0.09			173	19	114	4	DWR
		3-27-56		279	7.7	34 1.70	6 0.49	15 0.65	2.0 0.05	0 0.00	134 2.20	17 0.36	7 0.20	3.0 0.05	0.4 0.02	0.04			175	22.4	109	0	DWR
		9-12-56		275	7.[illegible]	31 1.55	7 0.58	14 0.61	1.8 0.05	0 0.00	134 2.20	21 0.44	6 0.17	2.25 0.04	0.4 0.02	0.04	25		184	21	107	0	DWR
Gage Canal Company Irrigation well	1S/4W-13F2	9-12-56		255	7.7	25 1.25	5 0.41	20 0.87	1.9 0.05	0 0.00	134 2.20	14 0.29	4 0.11	1.5 0.02	0.6 0.03	0.02	25		174	33.6	85	0	DWR
Masbur Realty Company Domestic well	1S/4W-13F3	5-19-55	65	503	7.7	70 3.5	12 1.00	18 0.79	3.2 0.08	0 0.00	244 4.0	23 0.47	19 0.55	12.5 0.20	0.8 0.04	1.29	1.71		296	15	225	25	DWR
		8-29-55		503	7.7	72 3.6	13 1.10	25 1.08	3.5 0.09	0 0.00	259 4.25	48 1.01	21 0.6	9.2 0.15	0.7 0.04	0.06			310	18	235	22.5	DWR
		9-21-55		454	8.0	72 3.59	10 0.82	21 0.91	4.0 0.10	0 0.00	249 4.08	23 0.48	20 0.56	17.4 0.28	0.4 0.02	1.24			245	16.8	221	17	DWR
		3-18-56		509	7.9	67 3.34	13 1.07	20 0.87	3.6 0.09	0 0.00	251 4.12	24 0.49	21 0.59	8.0 0.13	0.4 0.02	1.24			300	16.2	221	15	DWR
		9-12-56		435	7.[illegible]	[illegible] 2.84	12 0.99	17 0.74	3.7 0.10	0 0.00	222 3.64	32 0.66	13 0.37	1.4 0.02	0.4 0.02	0.70	20		276	15.8	194	12	DWR
Gage Canal Company Irrigation well	1S/4W-13G1	5-19-55		286	7.6	36 1.8	6 0.52	10 0.43	1.8 0.05	0 0.00	137 2.25	15 0.31	5 0.15	4.9 0.08		0.03	1.83		169	15	116	3.5	DWR
		5-24-56		280	7.4	37 1.85	7 0.58	11 0.48	1.7 0.04	0 0.00	144 2.36	18 0.37	7 0.20	5.8 0.09	0.5 0.03	0.04	20		178	16.3	123	5	DWR

u Determined by addition of constituents.

b Gravimetric determination

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated.

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Percent sodium	Hardness as $CoCO_3$: Total ppm	Hardness as $CoCO_3$: NC ppm	Analyzed by c
	SBB&M					BUNKER HILL BASIN (Continued)																
Gage Canal Company Irrigation well	1S/4W-13G1	5-24-56		250	7.9	36.8 / 1.84	8.3 / 0.68	13 / 0.57	1.9 / 0.05	0 / 0.00	140 / 2.29	21.0 / 0.44	10.0 / 0.28	5.2 / 0.08	0.3 / 0.02	0.10	17.6	248	18.2	126	11.5	TTL d
		9-12-56		266	7.5	35 / 1.75	7 / 0.58	10 / 0.44	2.0 / 0.05	C / 0.00	139 / 2.28	14 / 0.30	6 / 0.17	6.0 / 0.10	0.4 / 0.02	0.06	20	178	15.6	117	3	DWR
Gage Canal Company Domestic well	1S/4W-13L1	8-29-55		354	7.7	48 / 2.4	10 / 0.84	13 / 0.55	2.1 / 0.05	0 / 0.00	162 / 2.65	24 / 0.50	7 / 0.2	22.5 / 0.36	0.8 / 0.04	0.17		230	14	162	29.5	DWR
		3-27-56		273	7.8	38 / 1.90	7 / 0.58	12 / 0.52	2.0 / 0.05	0 / 0.00	144 / 2.36	14 / 0.30	5 / 0.14	11.0 / 0.18	0.6 / 0.03	0.02		175	17.0	124	6	DWR
		9-12-56		407	7.5	49 / 2.45	12 / 0.99	19 / 0.83	2.7 / 0.07	C / 0.00	215 / 3.52	16 / 0.34	14 / 0.39	5.4 / 0.09	0.5 / 0.03	0.84	20	247	19.1	172	0	DWR

c Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC) or State Department of Water Resources (DWR), as indicated
d Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBR&M					SAN LUIS REY VALLEY, COASTAL AREA																
George Negata Irrigation well	11S/4W-4N1	3-16-55		943	7.5					0 / 0.00	285 / 4.68		130 / 3.67									DWR
		4-19-55		1010		73.0 / 3.65	29.4 / 2.43	92.0 / 4.00	5.5 / 0.15	0 / 0.00	287 / 4.71	75.9 / 1.58	132 / 3.71	11.8 / 0.19	0.2 / 0.01	0.13	30	709	39	304	68.5	PCC
		9-29-55		913	8.1	73 / 3.64	26 / 2.14	85 / 3.70	5.0 / 0.13	0 / 0.00	264 / 4.32	72 / 1.49	129 / 3.64	7.6 / 0.12	0.4 / 0.02	0.14		596	38.5	289	73	DWR
		4-19-56	64	1070	7.8						315 / 5.16		136 / 3.84							345	87	DWR
		12-5-56	67	1040	7.4					0 / 0.00	293 / 4.80		135 / 3.80							330	90	TTL [d]
Academy of the Little Flower Domestic well	11S/4W-8J1	4-19-55		2470	7.5	169 / 8.45	74.1 / 6.09	267 / 11.60	6.3 / 0.16	0 / 0.00	326 / 5.34	215 / 4.47	561 / 15.82	38.4 / 0.62	0.2 / 0.01	0.10	18	1959	44	727	460	PCC
		9-29-55		2381	7.7					0 / 0.00	310 / 5.08		550 / 15.51							704	450	DWR
		4-20-56	68	2463	7.5						329 / 5.40		525 / 14.81							673	403	DWR
		12-17-56		2450	7.6					0 / 0.00	326 / 5.35		540 / 15.21							690	422.5	TTL [d]
Clarence Nishizu Domestic & Irrigation well	11S/4W-8N1	3-16-55		2640	7.6					0 / 0.00	303 / 4.96		630 / 17.77									DWR
		4-19-55		2920	7.6	187 / 9.35	62.3 / 5.15	308 / 13.40	3.1 / 0.08	0 / 0.00	304 / 4.98	223 / 4.64	656 / 18.50	1.2 / 0.02	0.4 / 0.02	0.35	30	1813	44.8	725	476	PCC
		9-29-55		2457	7.5					0 / 0.00	293 / 4.80		594 / 16.75							704	464	DWR
		4-20-56	64	2740	7.8	179 / 8.96	64.7 / 5.32	279 / 12.12	3.0 / 0.08	0 / 0.00	302 / 4.94	196 / 4.08	600 / 16.91	0.6 / 0.01	0.5 / 0.03	0.28		1814	45.8	714	467	PCC
S. Davies Domestic & Irrigation well	11S/4W-18C1	3-16-55		1185	7.7					0 / 0.00	278 / 4.56		170 / 4.79									DWR
		4-19-55		1176	7.4	82.0 / 4.10	33.3 / 2.75	109 / 4.74	5.3 / 0.14	0 / 0.00	265 / 4.34	104 / 2.16	180 / 5.06	1.2 / 0.02	0.2 / 0.01	0.10	32	728	40	350	133	PCC

a Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBR&M					SAN LUIS REY VALLEY, COASTAL AREA (Continued)																
S. Davies Domestic & Irrigation well	11S/4W-18C1	9-29-55		1094	8.4					14 / 0.4	234 / 3.84		176 / 4.96							339	123	DWR
		5-28-56	60	1190	7.8	88.0 / 4.40	30.2 / 2.48	113 / 4.92	5.3 / 0.14	0 / 0.00	272 / 4.46	124 / 2.58	179 / 5.04	0.0 / 0.00	.5 / 0.03	0.15		718	41	344	121	PCC
Carlsbad Mutual Water Co. Municipal well	11S/4W-18L4	4-19-55	66	1440	7.4	121 / 6.04	48 / 3.95	120 / 5.22	6.0 / 0.15	0 / 0.00	302 / 4.96	215 / 4.47	212 / 5.98	0.0 / 0.00	0.3 / 0.02	0.05	35	1058	34	500	252	DWR
Amsler Domestic & Irrigation well	11S/5W-13L1	2-28-55	68	1805	8.0	148 / 7.39	58 / 4.77	185 / 8.05	7.4 / 0.19	0 / 0.00	322 / 5.28	355 / 7.40	288 / 8.12	1.2 / 0.02	0.3 / 0.02	0.20		1297	39.5	608	344	DWR
		3-16-55		2160	7.4					0 / 0.00	342 / 5.60		220 / 6.20									DWR
		4-19-55		1850	7.5	171 / 8.53	66 / 5.43	180 / 7.83	8.4 / 0.21	0 / 0.00	356 / 5.84	475 / 9.89	225 / 6.34	0.0 / 0.00	0.4 / 0.02	0.08	30	1434	35.5	698	406	DWR
		4-19-56	70	1690	7.8	127 / 6.35	47.2 / 3.88	165 / 7.16	6.9 / 0.18	0 / 0.00	334 / 5.46	264 / 5.49	227 / 6.40	1.2 / 0.02	0.3 / 0.02	0.17		1058	40.8	512	239	PCC
		12-4-56	68	1675	7.6					0 / 0.00	328 / 5.38		250 / 7.04							515	269	TTL [d]
Walter Johnson Irrigation well	11S/5W-14Q1	3-16-55	66	3450	7.3					0 / 0.00	276 / 4.52		830 / 23.41									DWR
		4-22-55		2410	7.4	225 / 11.25	87.0 / 7.18	162 / 7.04	8.6 / 0.23	0 / 0.00	309 / 5.06	533 / 11.12	338 / 9.51	1.2 / 0.02	0.2 / 0.01	0.16	28	1764	27	992	739	PCC
		9-29-55	70	2940	7.3	270 / 13.50	103 / 8.50	297 / 12.91	8.2 / 0.21	0 / 0.00	280 / 4.60	339 / 7.06	833 / 23.50	3.0 / 0.05	0.0 / 0.00	0.04		2448	37	1100	870	DWR
		1-6-56		2650	7.2					0 / 0.00	280 / 4.60		928 / 26.20							1100	870	DWR
		4-2-56	66	3333	7.5	274 / 13.67	109 / 8.96	344 / 14.96	13.0 / 0.33	0 / 0.00	276 / 4.52	294 / 6.12	958 / 27.02	1.5 / 0.02	0.4 / 0.02	0.18		2215	44.1	1132	906	DWR

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b Gravimetric determination.
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d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
	SBB&M				SAN LUIS REY VALLEY, COASTAL AREA (Continued)																	
Walter Johnson Irrigation well	11S/5W-23E1	3-16-55		19,050	7.2					0 0.00	346 5.68		6550 184.7									DWR
		4-19-55	66	18,340	7.0	414 20.70	448 37.00	2900 126.00	81.2 2.08	0 0.00	358 5.87	324 6.75	6020 169.50	11.2 0.18	0.0 0.00	1.10	38	11,800	67.8	2885	2591.5	PCC
		9-28-55	68	22,050	7.7	452 22.60	553 45.50	3870 168.20	76.2 1.95	0 0.00	363 5.95	994 20.70	7570 213.50	6.5 0.11	0.8 0.04	1.05		15,741	71	3405	3107.5	DWR
		4-2-56	66	17,857	7.4	477 23.80	530 43.57	3675 159.86	90.0 2.30	0 0.00	332 5.44	933 19.43	7170 202.19	15.0 0.24	0.6 0.03	1.2		15,360	69.5	3369	3097	DWR
		12-4-56	68	32,220	7.5	458 22.90	689 56.48	5129 223	141 3.60	0 0.00	354 5.80	1275 26.56	9500 267.60	0.0 0.00	0.6 0.03	0.60	41	19,520	73	3969	3679	TTL

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b Gravimetric determination.

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a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					EL CAJON VALLEY																
E. Joewer Domestic and Irrigation well	15S/1E-31R1	4-20-55		1069	7.2	47.0 / 2.35	30.0 / 2.48	119 / 5.18	4.2 / 0.11	0 / 0.00	187 / 3.06	62.3 / 1.30	173 / 4.88	44.7 / 0.72	0.6 / 0.03	0.0	42	720	51.2	242	89	PCC
		8-2-56	74	1150	7.2					0 / 0.00	360 / 2.90		183 / 5.15							368	223	DWR
Edgemore Farm Domestic well	15S/1W-27G1	4-20-55		2440	7.8	144 / 7.20	86.2 / 7.08	300 / 13.05	2.8 / 0.07	0 / 0.00	487 / 8.00	424 / 8.83	374 / 10.55	29.2 / 0.47	0.4 / 0.02	0.22	32	1773	47.7	714	314	PCC
		9-29-55		2747	7.9	157 / 7.83	93 / 7.64	320 / 13.92	2.7 / 0.069	0 / 0.00	510 / 8.36	469 / 9.78	400 / 11.28	32.0 / 0.52	0.5 / 0.03	0.18		1863	47.4	774	356	DWR
		4-18-56	67	2273	7.4						508 / 8.32		378 / 10.66							740		DWR
		12-19-56		1075	7.9	93 / 4.65	37 / 3.03	138 / 6.00	5.9 / 0.15	0 / 0.00	153 / 2.50	369 / 7.69	118 / 3.32	1.4 / 0.02	0.4 / 0.02	0.0 / 0.00	10	853	43.3	284	159	TTL [d]
G. G. Snyder Domestic & Irrigation well	15S/1W-34R3	4-20-55		1750	7.3	119 / 5.95	62.0 / 5.10	143 / 6.20	2.9 / 0.07	0 / 0.00	159 / 2.61	63.8 / 1.33	438 / 12.35	57.0 / 0.92	0.3 / 0.02		40	1608	35.8	553	422.5	PCC
		2-29-55		1733	8.0					0 / 0.00	151 / 2.48		466 / 13.14							585	441	DWR
		4-18-56	63	1786	7.4						166 / 2.72		466 / 13.14							595		DWR
		12-18-56		1550	7.5	101 / 5.05	59 / 4.84	175 / 7.61	2 / 0.05	0 / 0.00	186 / 3.05	72 / 1.50	440 / 12.39	37 / 0.60	0.3 / 0.02	0.02	40	1100	43.4	495	342.5	TTL [d]
Rhodes Domestic well	16S/1W-1H4	4-20-55		1476	7.2	124 / 6.20	68.4 / 5.65	120 / 5.24	1.6 / 0.04	0 / 0.00	270 / 4.42	231 / 4.82	199 / 5.61	137 / 2.21	0.3 / 0.02		46	1160	30.6	593	372	PCC
		9-26-55		1522	8.0					0 / 0.00	254 / 4.16		180 / 5.08							572	364	DWR
		4-18-56	59	1587	7.4						281 / 4.60		187 / 5.27							587		DWR
		12-18-56		1350	7.7					0 / 0.00	270 / 4.42		187 / 5.30							565	344	TTL [d]

a Determined by addition of constituents

b Gravimetric determination.

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d Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					EL CAJON VALLEY (Continued)																
J. W. Pickett Domestic & Irrigation well	16S/1W-2K6	4-20-55		2180	7.4	130 / 6.50	61.8 / 5.11	208 / 9.04	1.4 / 0.04	0 / 0.00	309 / 5.07	116 / 2.42	407 / 11.49	101 / 1.63	0.4 / 0.02	0.0	50	1337	43.7	581	327.5	PCC
		8-1-56	62	1830	7.5	123 / 6.15	58 / 4.75	194 / 8.42	1.2 / 0.03	0 / 0.00	287 / 4.7	100 / 2.09	385 / 10.85	76.9 / 1.24		0.16		1222	43.5	545	310	DWR
		12-18-56		1650	7.6					0 / 0.00	267 / 4.38		398 / 11.21							520	301	TTL[d]
Ed Fletcher Co. Domestic & Irrigation well	16S/1W-3E1	4-20-55	78	1189	7.8	59.0 / 2.95	32.3 / 2.66	143 / 6.20	4.8 / 0.12	0 / 0.00	169 / 2.77	53.7 / 1.12	282 / 7.95	16.1 / 0.26	0.3 / 0.02	0.22	20	875	52	281	142	PCC
		9-24-55		1289	7.8	62 / 3.09	31 / 2.55	144 / 6.26	4.7 / 0.12	0 / 0.00	163 / 2.68	41 / 0.86	298 / 8.40	0.5 / 0.01	0.4 / 0.02	0.16		815	52	282	148	DWR
		4-19-56	74	1205	7.8						168 / 2.76		308 / 8.69							308		DWR
		12-17-56	76	1200	7.7					0 / 0.00	16.5 / 2.70		325 / 9.15							310	175	TTL[d]
Russel Kendall Domestic & Irrigation well	16S/1W-3K3	4-19-55		4730	8.1	320 / 16.00	173 / 14.27	455 / 19.80	2.8 / 0.07	0 / 0.00	341 / 5.58	178 / 3.70	1370 / 38.62	156 / 2.52	0.2 / 0.01	0.10	52	3131	39.5	1514	1235	PCC
Ed Fletcher Co. Domestic well	16S/1W-3N1	4-20-55	78	1186	7.9	67.0 / 3.35	35.5 / 2.92	124 / 5.40	5.5 / 0.14	0 / 0.00	187 / 3.06	45.6 / 0.95	267 / 7.54	6.2 / 0.10	0.4 / 0.02	0.16	24		45.7	314	161	PCC
		9-28-55	80	1253	8.3					14 / 0.48	146 / 2.40		288 / 8.12							326	144	DWR
		9-14-56	75	1205	7.6						190 / 3.12		286 / 8.07							333		DWR
		12-28-56	76	1100	7.6					0 / 0.00	183 / 3.00		303 / 8.54							340	190	TTL[d]
E. S. Clark Domestic & Irrigation well	16S/1W-3Q1	4-19-55		2320	7.6	147 / 7.25	75.0 / 6.17	253 / 11.00	1.0 / 0.03	0 / 0.00	354 / 5.82	102 / 2.13	516 / 14.54	112 / 1.80	0.2 / 0.01	0.0	42	1874	45	671	380	PCC
		8-2-56	73	2580	7.3	156 / 7.80	83 / 6.80	238 / 10.35	9.8 / 0.03	0 / 0.00	342 / 5.60	92 / 1.91	555 / 15.65	103.0 / 1.66	0.1 / 0.01	0.18		1670	41	730	450	DWR
Guy Edis Domestic well	16S/1W-10A2	4-19-55		1940	7.2	108 / 5.40	52.8 / 4.36	184 / 8.00	1.7 / 0.04	0 / 0.00	189 / 3.09	57.5 / 1.20	442 / 12.45	51.5 / 0.83	0.4 / 0.02	0.0	52	1265	45	488	333.5	PCC
		9-28-55		1880	7.6					0 / 0.00	185 / 3.04		446 / 12.58							484	332	DWR

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b Gravimetric determination.

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ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated
d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by c
SBR&M						EL CAJON VALLEY (Continued)																
Guy Edis Domestic well	16S/1W-10A2	4-18-56	60	1111	7.9	100 / 4.99	34 / 2.79	115 / 5.00	5.2 / 0.13	0 / 0.00	171 / 2.80	343 / 7.15	108 / 3.05	4.5 / 0.07	0.6 / 0.03	0.22	10	875	38.7	389	249	DWR
Ed Fletcher Co. Domestic well	16S/1W-10D1	4-20-55	78	1186	7.9	56.0 / 2.80	24.7 / 2.03	159 / 6.90	4.7 / 0.12	0 / 0.00	174 / 2.82	48.0 / 1.00	278 / 7.85	19.2 / 0.31	0.3 / 0.02	0.29	25	850	58.2	242	101	PCC
		9-28-55	78	1280	8.3	58 / 2.89	24 / 1.97	160 / 6.90	4.6 / 0.12	7 / 0.24	149 / 2.44	47 / 0.98	288 / 8.12	6.7 / 0.11	0.4 / 0.02	0.38		793	58.3	243	109	DWR
		4-19-56	69	1250	7.7						188 / 3.08		290 / 8.18							308		DWR
		12-17-56	75	1050	7.85	55 / 2.75	28 / 2.30	168 / 7.30	5.1 / 0.13	0 / 0.00	171 / 2.80	47 / 0.98	303 / 8.54	4 / 0.06	0.4 / 0.02	0.3	28	790	58.5	253	113	TTL d
Ed Fletcher Co. Domestic well	16S/1W-10E2	4-20-55	78	1300	8.0	50.0 / 2.5	13.9 / 1.14	213 / 9.26	1.7 / 0.04	0 / 0.00	137 / 2.25	61.4 / 1.28	326 / 9.19	0.0 / 0.00	0.6 / 0.3	0.53	16	814	71.6	182	69.5	PCC
		9-28-55	80	1326	8.3					5 / 0.16	122 / 2.00		340 / 9.59							169	61	DWR
		4-19-56	76	1333	7.9						144 / 2.36		333 / 9.39							166		DWR
		12-28-56	77	1200	7.8					0 / 0.00	131 / 2.15		340 / 9.58							173	65.5	TTL d
J. M. Conaway Irrigation well	16S/1W-11P4	4-20-55		4180	7.2	253 / 12.65	136 / 11.25	400 / 17.40	3.1 / 0.08	0 / 0.00	429 / 7.04	225 / 4.69	908 / 25.58	261 / 4.20	0.6 / 0.03	0.10	54	2827	42	1195	843	PCC
		9-28-55		4082	7.7					0 / 0.00	337 / 5.52		1007 / 28.34							1232	956	DWR
		4-18-56	59	4016	7.8						420 / 6.88		943 / 25.69							1195	851	DWR
		12-18-56		3500	7.6					0 / 0.00	393 / 6.45		920 / 25.92							1150	827.5	TTL
Maxson Domestic well	16S/1W-12J4	4-20-55		1600	7.4	95.0 / 4.75	64.1 / 5.30	113 / 4.90	4.6 / 0.12	0 / 0.00	194 / 3.18	78.5 / 1.64	312 / 8.79	90.4 / 1.46	0.4 / 0.02	0.0	50	1067	32.5	503	344	PCC
		9-28-55		1522	7.6					0 / 0.00	183 / 3.00		318 / 8.97							497	347	DWR

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d Terminal Testing Laboratory (TTL)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm b	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
SBB&M						EL CAJON VALLEY (Continued)																
Maxson Domestic well	16S/1W-12J4	4-18-56	68	1590	7.9						198 / 3.24		322 / 9.08							520	353	DWR
		12-18-56		1450	8.0					0 / 0.00	198 / 3.25		365 / 10.28							5.45	382.5	TTL d
A. W. McDonough Domestic well	16S/1W-15K3	4-20-55		6900	7.5	212 / 10.60	143 / 11.70	1060 / 46.0	0.7 / 0.02	0 / 0.00	550 / 9.01	247 / 5.14	1900 / 53.40	54.0 / 0.87	0.4 / 0.02	0.20	46	4395	67.3	1115	664.5	PCC
		8-2-56	71	6140	7.8	174 / 8.70	115 / 9.45	989 / 43.0	2.3 / 0.06	0 / 0.00	525 / 8.60	252 / 5.24	1670 / 47.1	32.4 / 0.523	0.7 / 0.04	0.35		3716	70	908	478	DWR

o Determined by addition of constituents.

b Gravimetric determination.

c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)

ANALYSES OF GROUND WATER

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated

Table 2. Ground Water

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					TIA JUANA VALLEY BASIN																
Holdermeese Test well	18S/2W-32H1	4-21-55	67	3110	7.3	188 / 9.40	95.4 / 7.88	433 / 18.80	4.2 / 0.11	0 / 0.00	540 / 8.85	472 / 9.83	621 / 17.50	1.9 / 0.03	0.8 / 0.04	0.55	20	2215	52	864	421.5	PCC
		9-20-55	68	2315	8.2	100 / 5.00	93 / 7.61	336 / 14.60	4.7 / 0.12	0 / 0.00	625 / 10.25	206 / 4.30	478 / 13.50	4.4 / 0.07	1.1 / 0.06	0.5		1586	53	630	117.5	DWR
		7-25-56	68	3615	7.7	168 / 8.40	105 / 8.60	598 / 26.00	7.8 / 0.20	0 / 0.00	627 / 10.28	483 / 10.06	850 / 23.95	0.0 / 0.00	0.7 / 0.03	0.4	28	2804	60	850	336	TTL [d]
		12-18-56		3800	7.5	160 / 8.00	89 / 7.30	554 / 24.10	0.4 / 0.01	0 / 0.00	598 / 9.80	421 / 8.76	748 / 21.10	4.3 / 0.07	1.7 / 0.09	0.64		2331	61	765	275	DWR
California Water & Telephone Co. Test well	18S/2W-32P2	9-20-55	66	2680	7.5	144 / 7.20	84 / 6.93	394 / 17.15	6.6 / 0.17	0 / 0.00	561 / 9.20	246 / 5.11	599 / 16.9	3.0 / 0.05	1.1 / 0.06	0.5		1820	55	707	247	DWR
		1-4-56		3230									733 / 20.67									CW&TC*
California Water & Telephone Co. Test well	18S/2W-32P4	8-18-55		11,111	7.0					0 / 0.00	27 / 0.44		3580 / 100.96							1562	1540	DWR
		8-18-55		11,364	6.7					0 / 0.00	17 / 0.28		3940 / 111.11							1793	1779	DWR
		8-18-55		12,500	7.0					0 / 0.00	154 / 2.52		4300 / 121.26							2200	2074	DWR
		8-18-55		10,989	7.2	396 / 19.76	301 / 24.74	2050 / 89.18	76 / 1.95	0 / 0.00	185 / 3.04	572 / 11.91	4290 / 120.98	2.5 / 0.04	0.6 / 0.03	0.74		8495	67	2225	2063	DWR
		7-25-56	68	11,300	7.2	216 / 10.80	322 / 26.39	2001 / 87.00	103.6 / 2.65	0 / 0.00	24.4 / 0.40	377.8 / 7.87	4040 / 113.86	0.0 / 0.00	0.0 / 0.00	0.4	3	8824	69	1860	1840	TTL [d]
		12-18-56	67	13,100	6.3	263 / 13.10	360 / 29.60	2116 / 92.00	75.8 / 1.94	0 / 0.00	12 / 0.20	403 / 8.40	4470 / 126.00	5.5 / 0.09	0.4 / 0.02	0.65		8345	67	2135	2125	DWR
James Jackson Irrigation well	18S/2W-33K4	12-18-56	68	3510	7.5	221 / 11.05	85 / 6.95	444 / 19.30	5.0 / 0.13	0 / 0.00	506 / 8.30	481 / 10.01	674 / 19.00	3.8 / 0.06	0.7 / 0.04	0.19		2316	52	900	485	DWR
Henry Schaffner Irrigation well	18S/2W-35L1	4-20-55	69	4170	7.8	225 / 11.25	100 / 8.26	570 / 25.20	5.4 / 0.14	0 / 0.00	506 / 8.30	280 / 5.83	1080 / 30.45	5.6 / 0.09		0.80	18	3304	56.2	976	560.5	PCC
		9-19-55	68	4100	7.9	132 / 6.60	103 / 8.47	613 / 26.65	1.4 / 0.04	0 / 0.00	171 / 2.75	272 / 5.66	1137 / 32.1	29.7 / 0.48	0.8 / 0.04	0.52		2624	64	753	615.5	DWR
		7-24-56	99	4230	8.0	224 / 11.20	128.3 / 10.52	648.6 / 28.20	11.7 / 0.30	0 / 0.00	510 / 8.36	397 / 8.27	1206 / 33.96	6.2 / 0.10	0.5 / 0.03	0.6	26	3368	56.2	1086	668	TTL [d]
		12-18-56		4870	7.3	264 / 13.15	119 / 9.75	614 / 26.70	3.3 / 0.09	0 / 0.00	555 / 9.10	309 / 6.44	1230 / 34.70	30.8 / 0.50	0.9 / 0.05	0.0		3151	54	1145	690	DWR

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.
d Terminal Testing Laboratory (TTL)
* California Water & Telephone Co. (CW&TC)

ANALYSES OF GROUND WATER

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SBB&M					TIA JUANA VALLEY(Continued)																
San Ysidro Irrigation District Municipal well	19S/2W-1E4	9-19-55		2720	7.9	148 / 7.40	69 / 5.65			0 / 0.00	299 / 4.90		659 / 18.60							652	407	DWR
		4-16-56	64	2625	7.4	128 / 6.40	50 / 4.10	351 / 15.25	4.1 / 0.11	0 / 0.00	394 / 6.45	179 / 3.72	557 / 15.7	1.6 / 0.03	0.1 / 0.01	0.45		1603	59	525	202.5	DWR
		7-24-56	69	2780	7.7	162.2 / 8.11	81.4 / 6.67	386.4 / 16.80	7 / 0.18	0 / 0.00	341.6 / 5.60	244 / 5.08	772 / 21.75	0.0 / 0.00	0.5 / 0.02	0.3	24	2180 [a]	53	739	459	TTL [d]
Irrigation well	19S/2W-2E1	9-19-55	68	3460	7.8	218 / 10.9	89 / 7.35	469 / 20.40	4.5 / 0.12	0 / 0.00	433 / 7.1	377 / 7.85	832 / 23.5	28.1 / 0.45	1.0 / 0.05	0.26		2356	53	913	558	DWR
		1-4-56		3550									861 / 24.3									CW&TC*
		7-24-56	67	2480	8.0	174 / 8.70	71.2 / 5.83	386.4 / 16.80	5.5 / 0.14	0 / 0.00	366 / 6.00	279 / 5.81	675 / 19.02	6.2 / 0.10	0.4 / 0.02	0.3	23	2072	53	727	427	TTL [d]
		12-18-56	67	3950	7.8	196 / 9.80	91 / 7.50	524 / 22.8	4.3 / 0.11	0 / 0.00	433 / 7.10	358 / 7.45	883 / 24.9	16.6 / 0.27	0.6 / 0.03	0.0		2418	27	865	510	DWR
Aballo and Wright Stock & Irrigation well	19S/2W-3A1	4-20-55	69	3310	7.7	204 / 10.20	81.6 / 6.73	448 / 19.48	5.4 / 0.14	0 / 0.00	467 / 7.67	344 / 7.17	770 / 21.67	10.5 / 0.17	0.5 / 0.03	0.52	16	2440	53.3	847	463.5	PCC
		7-24-56	69	3565	7.6	196.8 / 9.84	97.7 / 8.01	538.2 / 23.40	7 / 0.18	0 / 0.00	400 / 6.56	436.3 / 9.09	900 / 25.35	4.4 / 0.07	0.3 / 0.02	0.4	22	2768 [a]	56.5	893	565	TTL [d]
		12-18-56	68	4650	7.6	220 / 11.00	125 / 10.25	619 / 26.90	3.4 / 0.09	0 / 0.00	552 / 9.05	478 / 9.96	1053 / 29.70	25.4 / 0.41	0.6 / 0.03	0.19		2937	56	1063	610.5	DWR
California Water & Telephone Co. Domestic well	19S/2W-4A5	1-4-55		2270									446 / 12.6									CW&TC*
		4-21-55	65	2280	7.8	132 / 6.60	65.0 / 5.35	276 / 12.00	3.90 / 0.10	0 / 0.00	354 / 5.82	294 / 6.12	418 / 11.80	5.00 / 0.08	0.6 / 0.03	0.35	18	1558	50	598	307	PCC
		9-20-55	66	2500	7.9	1 / 7	72 / 5.90	288 / 12.5	3.7 / 0.09	0 / 0.00	354 / 5.70	326 / 6.80	471 / 13.3	2.4 / 0.04	0.8 / 0.04	0.28		1582	48	685	400	DWR
		7-24-56	66	2020	7.8	129.4 / 6.47	67.3 / 5.51	299 / 13.00	4.7 / 0.12	0 / 0.00	307.4 / 5.04	353.3 / 7.36	450 / 12.68	0.0 / 0.00	0.3 / 0.02	0.2	22	1528	52	599	347	TTL [d]
		12-18-56	67	2500	7.5	130 / 6.50	53 / 4.35	251 / 10.93	3.3 / 0.08	0 / 0.00	363 / 5.95	254 / 5.28	390 / 11.0	3.3 / 0.05	0.0 / 0.00	0.19		1357	50	543	245.5	DWR

a Determined by addition of constituents.

b Gravimetric determination.

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d Terminal Testing Laboratory (TTL)

* California Water & Telephone Co. (CW&TC)

Source	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Total dissolved solids in ppm [b]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: NC ppm	Analyzed by [c]
	SPR&M					TIA JUANA VALLEY (Continued)																
California Water & Telephone Co. Test well	19S/2W-5C6	4-21-55	71	3300	7.3	82.0 4.10	98.6 8.12	485 21.04	9.2 0.24	0 0.00	17.0 0.28	4.8 0.10	1163 32.80	1.9 0.03	0.2 0.01	0.24		2501	62.8	611	597	PCC
		7-25-56	70	9040	6.9	462 23.10	322.4 27.25	1311 57.00	20.3 0.52	0 0.00	14.6 0.24	352.3 7.34	3540 99.74	0.0 0.00	0.2 0.01	0.3	13	8792	53	2518	2506	TTI [d]
Knox Farm Irrigation well	19S/2W-5G1	9-20-55	66	4710	7.7	204 10.20	98 8.05	740 32.20	9.0 0.23	0 0.00	537 8.80	447 9.31	1134 32.0	5.0 0.08	0.1 0.01	0.94		2974	64	912	472	DWR
		7-24-56	68	4845	7.7	248 12.40	145.8 11.95	846.4 36.80	7.8 0.20	0 0.00	390.4 6.40	483 10.06	1590 44.80	0.0 0.0	0.3 0.02	0.5	29	4000 [a]	60	1218	898	TTI [d]
		12-18-56	69	6960	7.5	268 13.35	163 13.40	1005 43.70	3.4 0.09	0 0.00	595 9.75	503 10.48	1844 52.0	5.7 0.09	0.8 0.04	0.71		4363	62	1338	850.5	DWR
California Water & Telephone Co. Test well	19S/2W-5I2	4-22-55	67	4530	7.8	179 8.95	88.0 7.24	760 33.00	6.5 0.17	0 0.00	537 8.80	458 9.55	1100 31.40	0.6 0.01	0.8 0.04	0.93	16	3030	67	810	370	PCC
		9-20-55	67	4800	7.9	184 9.20	97 7.95	775 33.70	7.5 0.19	0 0.00	537 8.80	443 9.23	1155 32.6	4.7 0.08	1.0 0.05	0.98		3043	66	858	428	DWR
		7-25-56	69	5650	7.9	142.4 7.12	134.1 10.99	110.4 48.00	13.7 0.35	0 0.00	512.4 8.40	511.7 10.66	1617 45.56	0.9 0.01	0.6 0.03	0.8	22	4576	72	906	486	TTI [d]
		12-18-56	68	6200	7.5	130 6.50	129 10.6	973 42.3	7.7 0.20	0 0.00	229 3.75	373 7.76	1709 48.2	8.4 0.14	0.9 0.05	0.69		3737	71	855	667.5	DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U S Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated.

d Terminal Testing Laboratory (TTL)